1 September '09

Dear Aaron,

What a coincidence!!

Ever since Russ' 1976 Elect Rwys of MN, I've spent a good bit of time on DSR research.... I put the finishing touches on it last week.

I feel that the "stuff" I've dug up will help you do a book on DSR. I would be pleased to have you do that.

I wish I had been with you in Duluth to hear the presentation, and a chance to stomp over some of the old DSR rails. Interesting, ha!?

I'll UPS ~~the~~ my DSR notes this week.

Keep me posted, please, on your progress

Sincerely

Jim

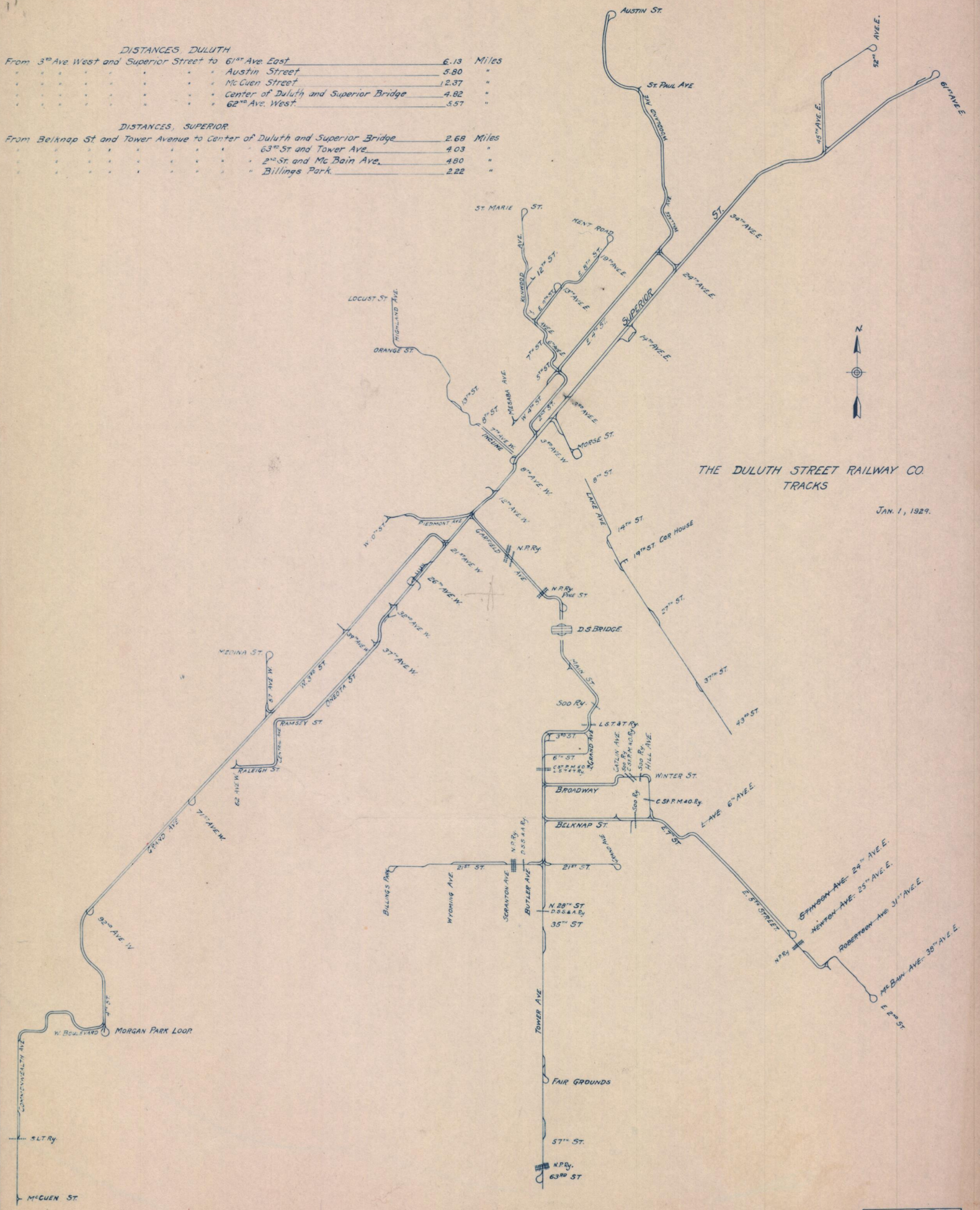
110

DISTANCES. DULUTH

From 3rd Ave West and Superior Street to 61st Ave East	6.13	Miles
" " " " " " " " Austin Street	5.80	"
" " " " " " " " Mc Cuen Street	12.37	"
" " " " " " " " Center of Duluth and Superior Bridge	4.82	"
" " " " " " " " 62nd Ave. West	5.57	"

DISTANCES. SUPERIOR

From Belknap St and Tower Avenue to Center of Duluth and Superior Bridge	2.68	Miles
" " " " " " " " 63rd St and Tower Ave	4.03	"
" " " " " " " " 2nd St. and Mc Bain Ave.	4.80	"
" " " " " " " " Billings Park	2.22	"



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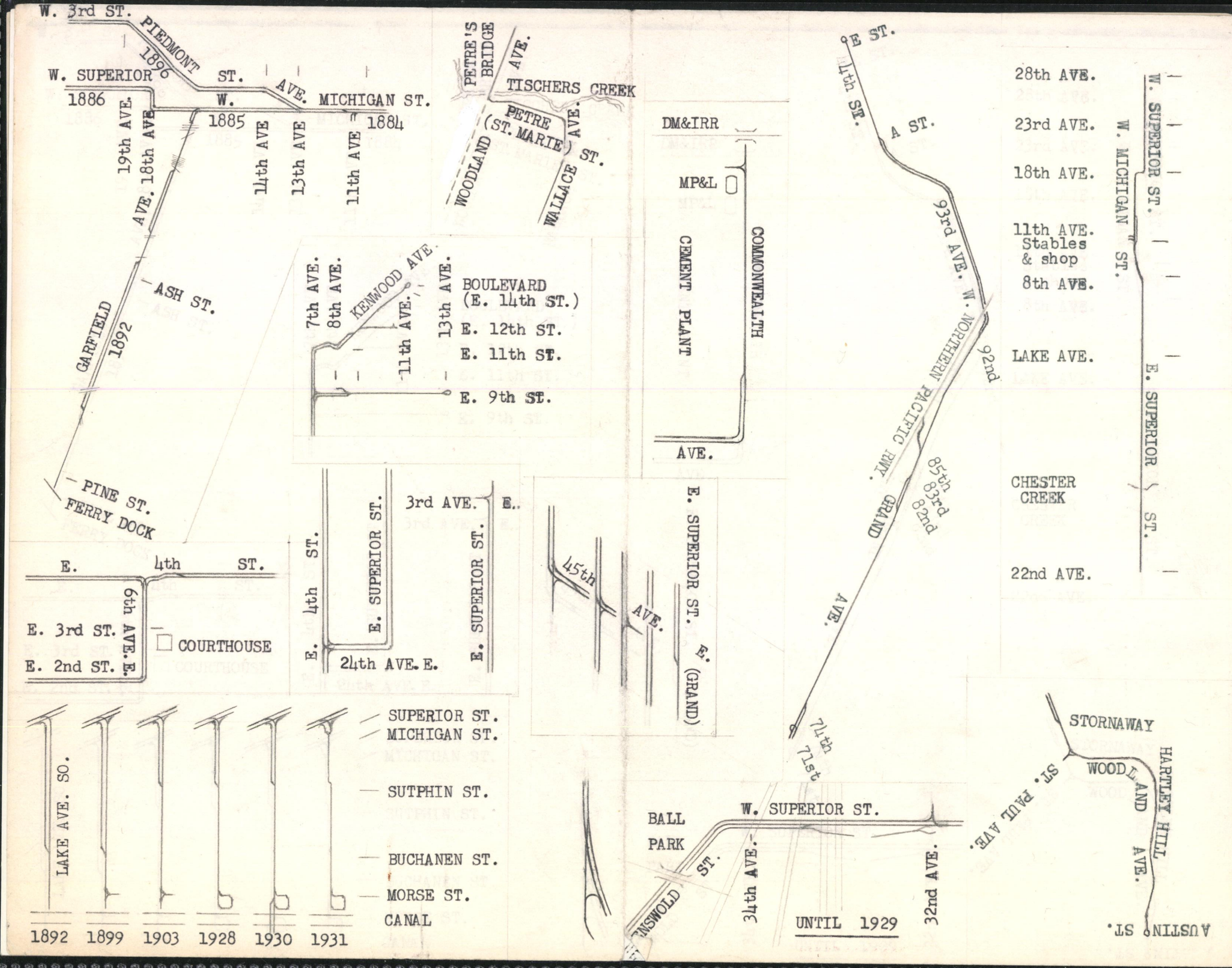
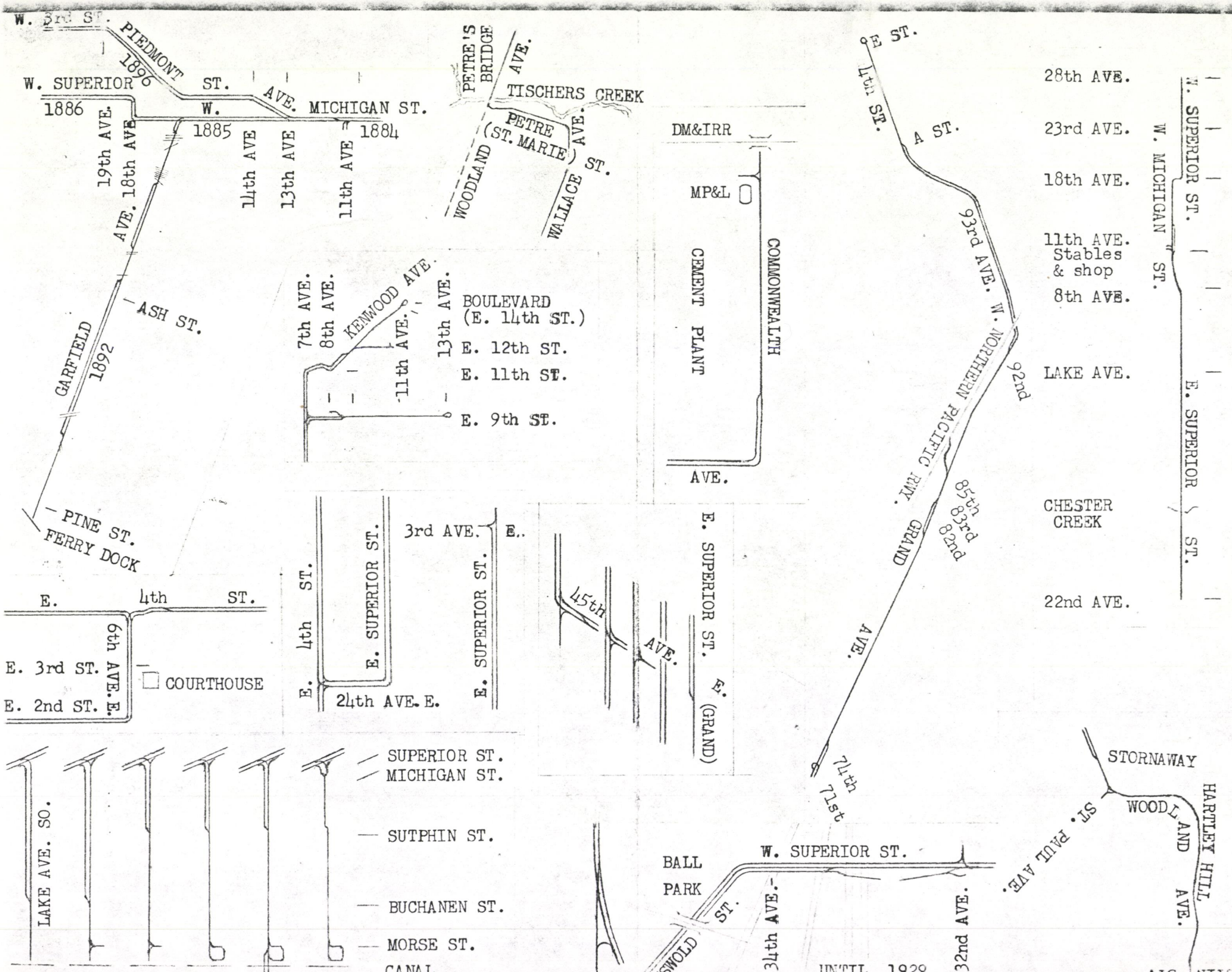
Style #62037 1-888-860-9120


W. 3rd ST.
PIEDMONT
1896
W. SUPERIOR ST.
1886
W.
1885
AVE. MICHIGAN ST.
1884
19th AVE.
18th AVE
14th AVE
13th AVE
11th AVE
PETRE'S BRIDGE
AVE.
TISCHERS CREEK
PETRE (ST. MARIE) AVE.
WOODLAND
WALLACE ST.
DM&IRR
MP&L
CEMENT PLANT
COMMONWEALTH
AVE.
E ST.
4th ST.
A ST.
93rd AVE. W.
NORTHERN PACIFIC RWY.
92nd
85th
83rd
82nd
GRAND
AVE.
71st
74th
28th AVE.
23rd AVE.
18th AVE.
11th AVE.
Stables
& shop
8th AVE.
LAKE AVE.
CHESTER
CREEK
22nd AVE.
W. SUPERIOR ST.
W. MICHIGAN ST.
E. SUPERIOR ST.
7th AVE.
8th AVE.
KENWOOD AVE.
11th AVE.
13th AVE.
BOULEVARD
(E. 14th ST.)
E. 12th ST.
E. 11th ST.
E. 9th ST.
ASH ST.
GARFIELD
1892
PINE ST.
FERRY DOCK
E. 4th ST.
E. SUPERIOR ST.
3rd AVE. E.
E. SUPERIOR ST.
E. 4th ST.
24th AVE. E.
45th
AVE.
E. SUPERIOR ST. E. (GRAND)
E. 4th ST.
E. 3rd ST.
E. 2nd ST.
6th AVE. E.
COURTHOUSE
STORNAWAY
ST. PAUL AVE.
WOODLAND
HARTLEY HILL
AVE.
AUSTIN ST.
BALL
PARK
W. SUPERIOR ST.
ST.
34th AVE.
32nd AVE.
UNTIL 1929
LAKE AVE. SO.
SUPERIOR ST.
MICHIGAN ST.
SUTPHIN ST.
BUCHANEN ST.
MORSE ST.
CANAL
1892
1899
1903
1928
1930
1931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34th AVE.
32nd AVE.
STORNAWAY
ST. PAUL AVE.
WOODLAND
AVE.
HARTLEY HILL
UNTIL 1929

UNNAMED DIVIDER

STATISTICS OF TRAFFIC.

Year ending June 30,

	1898.	1899.
Passengers carried	661,200	693,430
Car miles run	192,075	193,000
Total receipts per car mile	$.180	$.188
Operating expenses per car mile	.110	.127

BALANCE SHEET.—Dated June 30,

ASSETS.	1895.	1896.	1898.	1899.
Construction and equipment	$219,866	$223,066	$208,919	$225,812
Land and buildings	46,025	46,025	3,618	
Cash and cash assets	4,428	960	7,707	1,026
Material and supplies	690	690	900	1,100
Total	$271,009	$270,741	$221,144	$227,938
LIABILITIES.				
Capital stock	$150,000	$150,000	$100,000	$100,000
Funded debt	100,000	100,000	100,000	100,000
Current liabilities	2,563	3,369	2,891	4,203
Other liabilities			938	1,875
Profit and loss (surplus)	18,446	17,372	17,315	21,860
Total	$271,009	$270,741	$221,144	$227,938

PLANT AND EQUIPMENT.—Miles of track (electric), 7.5; gauge, 4 ft. 8½ in.; 45 lb. T and 70 lb. girder rail; 19 motor cars; Gen. Elec. dynamos, West. motors; Newburyport cars. Rent power.

OFFICERS.—Pres. Wallace D. Lovell, Boston; V. Pres. Geo. E. Wallace, Rochester, N. Y.; Sec. L. P. Snow, Rochester, N. Y.; Treas. A. H. Pride, Boston; Supt. A. H. McReel, Exeter; Asst. Supt. James E. Winn, Somersworth.

DIRECTORS.—Wallace D. Lovell, George E. Wallace, A. H. Pride, A. H. McReel, R. N. Elwell.

Date of information, Feb., 1901. x

DOYLESTOWN, PA.

Population in 1880, 2,070, in 1890, 2,519, in 1900, 2,900.

Doylestown & Willow Grove Railroad Co.—This company is a reorganization of the Bucks County Ry. Co., which was chartered Aug. 3, 1894 and sold at foreclosure sale, Mar. 14, 1900. This company's line extends from Doylestown to Willow Grove, 12 miles, and there connects with the lines of the Union Traction Co., of Philadelphia.

CAPITAL STOCK, authorized and issued, $500,000; par value, $50 per share.

FUNDED DEBT.—First mortgage 5 p. c. gold coupon bonds, authorized and issued, $500,000; dated 1900, due 1930; denom. $1,000; int. payable at office of Land Title & Trust Co., of Philadelphia, trustee of mortgage.

PLANT AND EQUIPMENT.—Miles of track (electric), 12.5; gauge, 4 ft. 8½ in.; 60 lb. rail; 11 motor cars; Gen. Elec. motors.

OFFICERS.—Pres. George D. Widener, V. Pres. C. R. Weaver, Sec. & Treas. Alex. Rennick, Philadelphia; Gen. Man. & Supt. S. G. Moore, Willow Grove; Ch. Engr. Robert Guyon, Elecn. E. Cayne. Supt. S. G. Moore.

GENERAL OFFICE, 1006 Land Title Building, Philadelphia.

SUPT'S. OFFICE, Willow Grove, Pa.

POWER STATION, Neshaminy, Bucks Co., Pa.

Date of information, Feb., 1901. z

DU BOIS, PA.

Population in 1880, 5,718, in 1890, 6,149, in 1900 (local estimates), 10,000.

Du Bois Traction Co.—This company is a reorganization on June 9, 1898, of the Du Bois Traction Passenger Railway Co. Chartered Apr. 4, 1890. Annual meeting second Monday in Jan.

CAPITAL STOCK, authorized and issued, $17,500; par value, $50 per share.

FUNDED DEBT, $17,000.

OPERATION.—Year ending June 30,

	1894.	1895.	1896.	1898.	1899.	1900.
Gross receipts	$7,314	$6,698	$6,178	$4,662	$6,970	$8,156
Operating expenses	6,736	6,285	7,718	4,558	6,560	6,104
Earnings from oper.	578	413	*1,540	104	41	2,052
Deductions from earnings.						
Interest						1,020
Taxes						88
Net income						944

*Deficit.

NOTE.—Owing to litigation, no report for 1896-'97 was obtainable.

BALANCE SHEET.—Dated June 30.

ASSETS.	1899.	1900.
Cost of road	$27,542	$27,741
Cost of equipment	9,229	9,248
Material and supplies	104	21
Cash	490	1,836
Open accounts	274	
Total	$37,639	$38,846
LIABILITIES.		
Capital stock	$17,500	$17,500
Funded debt	17,000	17,000
Accounts payable	2,729	2,992
Profit and loss (surplus)	410	1,354
Total	$37,639	$38,847

PLANT AND EQUIPMENT.—Miles of track (electric), 2.25; gauge, 4 ft. 8½ in.; 60 lb. girder rail; 4 motor cars; McEwen and Ball engines, West. and Gen. Elec. dynamos and motors, Brill and Stephen, son cars.

OFFICERS.—Pres. J. E. DuBois, Sec. & Treas. M. I. McCreight, Supt. F. H. Hetfield, Elecn. & Pur. Agt. J. Q. Anderson.

DIRECTORS.—J. E. DuBois, Wm. Osbourn, F. W. Hetfield, J. H. McEwen, L. M. Truxall, W. C. Pentz, M. I. McCreight.

GENERAL OFFICE, DuBois, Pa.

Date of information, Jan., 1901. z

DUBUQUE, IA.

Population in 1880, 22,254, in 1890, 30,311, in 1900, 36,297.

Union Electric Co.—Incorporated in 1900 as a consolidation of the Star Electric Co., the Home Electric Co. and the Dubuque Street Ry. Co. (certificate filed Aug. 17), constituting the electric light and street railway properties of the city of Dubuque, having three power stations and city lighting contract.

CAPITAL STOCK.—Common, $500,000, 5 p. c. cumulative preferred, $500,000; par value, $100 per share.

FUNDED DEBT.—None.

PLANT AND EQUIPMENT.—Miles of track (electric), 25; gauge, 4 ft. 8½ in.; 52 lb. girder rail; 31 motor cars and 17 trail cars; Sioux City engines, Edison 200 K. W. generators, West and Gen. Elec. motors, Brill, St. Louis and own cars.

OFFICERS.—Pres. F. D. Stout, V. Pres. S. W. Molo, Sec. E. A. Engler, Treas. G. W. Kiesel, Gen. Man. & Pur. Agt. W. J. Brown.

GENERAL OFFICE, Dubuque, Ia.

Date of information, Feb., 1901. z

Star Electric Co.—This company was consolidated into the Union Electric Co., Aug. 17, 1900.

Date of information, Feb., 1901. z

Home Electric Co.—This company was consolidated into the Union Electric Co., Aug. 17, 1900.

Date of information, Feb., 1901. z

DULUTH, MINN.

Population in 1880, 838, in 1890, 33,115, in 1900, 52,969.

Duluth-Superior Traction Co.—Incorporated in Connecticut in June, 1900, as a consolidation of the Duluth Street Ry., the Lakeside Street Ry. and the Superior Rapid Transit Ry. Co. of West Superior, Wis. The securities of the constituent companies were retired, but the corporate existence of the Duluth Street Ry. Co. is to be maintained, all of its capital stock being owned by the new company. The new company has a traffic agreement with the Duluth-Superior Bridge Co., at West Superior, and commenced operating all the electric railways in both cities on Aug. 13, 1900.

Capital Stock.—Common, authorized and issued, $3,500,000; preferred 4 p. c. cumulative, authorized, $1,500,000, issued, $1,300,000; par values, $100 per share.

Funded Debt.—Duluth Street Ry. Co.'s first mortgage 5 p. c. gold bonds, authorized, $2,500,000, issued, $2,000,000; coupon, but may be registered; dated May 1, 1900, due 1930; denom. $1,000; int. payable May and Nov., at office of Central Trust Co. of New York, trustee of mortgage.

Note.—$5,000,000 of these bonds are held in treasury for future improvements. The mortgage covers all the properties of the Duluth-Superior Traction Co., they having first been conveyed to the Duluth Street Ry. Co.

Operation.—Of Duluth Street Ry. only for year ending June 30,

	1897.	1898.	1899.	1900.
Gross earnings	$202,031	$201,840	$205,856	$266,956
Op. exp., incl'dg taxes and all other fixed charges, except int.	110,155	103,419	103,663	139,626
Earnings from operation	$91,876	$98,421	$102,193	$127,330

Please note date of information at end of each report.

Plant and Equipment.—Miles of track (electric), 73; gauge, 4 ft. 8½ in.; 45 lb. and 60 lb. girder and T rail; 100 motor cars, Allis engines, Gen. Elec. and West. dynamos and motors, Laclede and Northern cars.

Officers.—Pres. C. G. Goodrich, Sec. & Treas. L. Mendenhall, Audr. S. L. Reichert, Gen. Man. H. Warren, Ch. Engr. J. Carson.

General Office, 1108 No. Michigan St., Duluth, Minn.

Power Stations, Duluth, Minn., and West Superior, Wis.

References.—Systems consolidated, Vol. XVI, Aug. 25, '00, p. 781.

Date of information, Feb., 1901. d x

Duluth Street Railway Co.—Chartered Oct. 25, 1881, in perpetuity; franchise granted Nov. 17, 1881; road opened Nov. 1, 1882. This company operated the property of the Motor Line Improvement Co. and the Lakeside Ry. Co., until in July, 1898, it was placed in the hands of a receiver, and on Aug. 13, 1900, was consolidated with the Duluth-Superior Traction Co.

References.—Description of road, Vol. VII, Feb., '91, p. 64 (ill.); description of parks (brief), Vol. XIII, Mar., '97, p. 152.

Date of information, Feb., 1901. d x

Interstate Traction Co.—This company is a reorganization of the Minnesota Point Street Railway, chartered June, 1887, for 50 years. Annual meeting Apr. 15th. This company recently equipped its lines with electricity.

Capital Stock, authorized, $50,000, issued, $20,000.

Funded Debt.—First mortgage 6 p. c. gold bonds, authorized, $50,000, issued, $20,000; dated May, 1899, due 1919; denom. $500; int. payable May and Nov. at office of St. Paul Title & Trust Co., of St. Paul, Minn., trustee of mortgage.

Operation.—Year ending Oct. 31,

	1899.	1900.
Total receipts	$5,255	$8,640
Operating expenses	2,913	6,445
Earnings from operation	2,342	2,195
Deductions from earnings.		
Interest	900	1,242
Net income	1,442	953

Balance Sheet.—Dated Oct. 31,

ASSETS.	1899.	1900.
Cost of road and equipment	$35,309	$36,692
Real estate		4,353
Cash	1,142	294
Total	$36,451	$41,339
LIABILITIES.		
Capital stock	$20,000	$20,000
Funded debt	16,000	20,000
Profit and loss (surplus)	451	1,339
Total	$36,451	$41,339

Plant and Equipment.—Miles of track (electric), 3.50; gauge, 4 ft. 8½ in.; 35 lb. T rail; 4 motor cars and 4 trail cars; power purchased.

Officers.—Pres. and Gen. Man. Robert R. Dunn, V. Pres. H. O. Underwood, Sec. & Treas. A. W. Hartman.

Directors.—Robert R. Dunn, H. O. Underwood, O. C. Hartman, A. W. Hartman, C. F. Hartman.

General Office, 216 West Superior St., Duluth, Minn.

Date of information, Jan., 1901. z

Woodland Railway Co.—This company is the successor to the Motor Line Improvement Co., having purchased their property at foreclosure sale. This road is operated by the Duluth Street Ry. Co.

Capital Stock.—Common, authorized, $10,000, issued, $5,500. Preferred 5 p. c. class "A" authorized, $5,000, issued, $1,795. Preferred 3 p. c. class "B" authorized, $25,000, issued, $23,200; par value, all shares, $10 per share.

Plant and Equipment.—Miles of track (electric), 6; gauge, 4 ft. 8½ in.; 45 lb. T rail; 4 motor cars; Gen. Elec. dynamos and motors; Laclede cars.

Officers.—Pres. T. W. Hoopes, Sec. James Bardon, Treas. R. M. Hunter.

General Office, 11th Ave. West & Michigan St., Duluth, Minn.

Date of information, Feb., 1901. z

DUNKIRK, N. Y.

Population in 1880, 7,248, in 1890, 9,416, in 1900, 14,346.

Dunkirk & Point Gratiot Traction Co.—Charter and franchise granted in 1899 for 99 years. The road was placed in operation July 20, 1900, and is operated as a summer road only. Annual meeting May 1 each year.

CAPITAL STOCK, authorized and issued, $25,000; par value, $100 per share.

FUNDED DEBT.—First mortgage 5 p. c. gold coupon bonds, authorized and issued, $55,000; dated July 1, 1900, due 1930; denom. $500; int. payable Jan. and July, at office of N. Y. Security & Trust Co., of New York City, trustee of mortgage.

OPERATION.—Year ending Oct. 31, 1900.

Receipts from passengers	$6,136
Operating expenses	2,919
Earnings from operation	3,217
Deductions from earnings.	
Interest on bonds	1,377
Taxes	29
Net income	1,811
Per cent. operating expenses to receipts	47.57

BALANCE SHEET.—Dated Dec. 31, 1900.

Assets.		Liabilities.	
Cost of road and equip.	$49,377	Capital stock	$25,000
Other permanent invests.	30,000	Funded debt	55,000
Cash	3,840	Accrued interest	1,377
		Profit and loss (surplus)	1,840
Total	$83,217	Total	$83,217

PLANT AND EQUIPMENT.—Miles of track (electric), 3.1; gauge, 4 ft. 8½ in.; 60 lb. T rail; 3 motor cars and 3 trail cars; 150 H. P. station plant.

OFFICERS.—Pres. D. F. Toomey, V. Pres. A. C. Dotterweich, Sec. B. E. Farnham, Treas. H. C. Hequembourg, Ch. Engr. W. C. Wilcox.

DIRECTORS.—D. F. Toomey, H. C. Hequembourg, B. C. Farnham, A. C. Dotterweich, E. C. Haggett, B. L. Harrison F. B. Barman, M. P. Toomey.

GENERAL OFFICE, 309 Central Ave., Dunkirk, N. Y.

Date of information, Jan., 1901. z

DURANGO, COL.

Population in 1890, 2,726, in 1900, 3,317.

Durango Railway & Realty Co.

CAPITAL STOCK, authorized, $250,000, issued, $155,000.

FUNDED DEBT.—None.

PLANT AND EQUIPMENT.—Miles of track (electric), 2.25; gauge 4 ft. 8½ in.; 30 lb. T rail; 3 cars, of which 2 are motor cars and 1 trail car; Ide engines, West. dynamos and motors, Woeber cars.

OFFICERS.—Pres. J. A. Porter, V. Pres. & Ch. Engr. J. B. Harper, Sec. W. S. Pickerill, Treas. H. Schiffer, Elecn. J. J. McClarin.

Date of information, Jan., 1901. z

EAST LIVERPOOL, O.

Population in 1880, 5,568, in 1890, 10,947, in 1900, 16,485.

The East Liverpool Railway Co.—This is a reorganization of the East Liverpool & Wellsville Street R. R. Co., which was sold at sheriff's sale on May 5, 1897.

CAPITAL STOCK, authorized and issued, $300,000.

FUNDED DEBT.—First mortgage 5 p. c. gold bonds, authorized and issued, $150,000; dated June 1, 1897, due 1917; denom. $500, not subject to call; int. payable June and Dec., at office of Boston Safe Deposit & Trust Co, trustee of mortgage.

Second (income) mortgage 5 p. c. gold bonds, authorized and issued, $150,000; dated Sept. 1897, due 1917; denom. $500; int. payable Sept., at office of Boston Safe Deposit & Trust Co., trustee of mortgage.

PLANT AND EQUIPMENT.—Miles of track (electric), 12; gauge, 4 ft. 8½ in.; 56 lb. T and 81 lb. girder rail; 26 motor cars; Allis engine; West. motors, Stephenson and St. Louis cars.

OFFICERS.—Pres. & Gen. Man. J. B. Hoefgen, Sec. Wm. B. Whiting, Treas. L. W. Healy, Supt. T. A. Reed.

Date of information, Feb., 1901. d x

Chester & Rock Spring Street Railway Co.—The properties of this company which owned a line from East Liverpool to Chester, W. Va., were sold at foreclosure sale on Apr. 9, 1900, to Chas. A. Smith, of Chester, and his associates, for $35,000.

GENERAL OFFICE, Chester, W. Va.

Date of information, Apr., 1900. x

EAST ST. LOUIS, ILL.

Population in 1880, 9,185, in 1890, 15,169, in 1900, 29,655.

East St. Louis Electric Street Railroad Co.

CAPITAL STOCK, $500,000.

Duluth Populations

1880	3,483
90	33,000
1900	53,000
10	78,000
20	98,900
30	101,500

(Copied from Duluth News-Tribune
of January 1, 1894.

"IT'S A GREAT SYSTEM"

Duluth has one of the finest systems of electric street railways to be found anywhere in the United States. The first street railway was built here in 1884, and consisted of a line on Superior Street from 8th Ave. East to the west end. The power was horses. The road was a single track, narrow gauge affair, having little cars, and run without a conductor. From that road the system as it is today has grown. Three or four years ago electricity was substituted for horses, or rather mules, and from that day to this there has been a constant increase in the equipment, the trackage and the convenience of the road. The road today extends from West Duluth to Lakeside and Woodland Park, with lines on Garfield and Lake Avenues, on 4th street and on Highland Avenue. Every foot of it, except the latter, is double tracked, the tracks being standard gauge, and laid with steel rails of the weight of from 45 to 60 pounds. The total trackage is 50 miles.

The main line is from 22nd Ave. East to West Duluth, on Superior and Michigan streets. Branch lines run from Michigan street down Garfield Avenue to the foot of Rice's Point; from Superior Street down Lake Avenue to the canal entrance to the harbor; from 3rd Avenue West on Superior Street up to 2nd, thence east to 6th Avenue East and west on that street, and from 4th and Woodland Avenue to Woodland Park; from the pavilion at the top of the incline out Highaldn Avenue. The line to Lakeside is a continuation of the Superior street line from 22nd Ave. E. and was built and is owned by the Lakeside Street Railway Co., though operated by the Duluth St. Ry. Co., the owner of the main line and of the street railway franchise for the city. The Woodland Park line is owned by the Motor Line Improvement Co., and operated by the Duluth St. Ry. Co., forming a part of its sytem, as does the Lakeside line.

From Superior street up 7th Ave. West to 9th Street, and at the base of Highland Avenue there is an elevated cable road, owned and operated by the Dul. St. Ry. Co. This is one of the finest incline lines in the country. The power is furnished by an immense engine located at the top of the incline, and the cars are hauled up the incline by an immense wire cable, 1 3/4 inches in diameter, The great engine whih furnished the power is a Corliss, a standard hoisting engine such as is used for depp mine work. It consists of a pair of cylinders 26 by 60 inches, a single and double crank direct, attached to a pair or train of Walker's differential drums. It has 750 horsepower, and is one of the big engines of the state, and in most respects, the most remarkable. There is a device by which the handling of passengers is made absolutely safe. The cars on this incline run every few minutes, and are able to carry at each trip 250 passengers.

At the head of the incline the DSR Co. has erected a fine two-story pavilion, which overlooks the entire city, and from which the view of cities, harbor and lake is equal to any other such view in the country. The pavilion is large enough to accommodate easily 6,000 people, and the two floors will hold many more than that number. This is one of the chief attractions of the city, and every summer evening the people of Duluth resort to it. The company maintains a band there all through the summer season and gives each afternoon and evening free concerts.

The main powerhouse of the company is on Superior St. and 11th Ave. West. It consists of a large brick building, filled with machinery. The chief engine has 1,000 horsepower. In the west end there is a large car barn, and there also are the repair shops of the company.. There is another car barn in the east end.

DSR did not escape the devastating economic effects of the Panic of 1893; nor did SRTR. Declining revenues lead, finally, to bankruptcy and receivership on July 7, 1898. Simmering labor unrest erupted in a disruptive work stoppage on May 2, 1899, compounding management woes.

In an effort to rectify the unfortunate results of deferred maintenance during these difficult times, the bankruptcy courts ordered an evaluation of the properties. The Audit Co. of New York, through its affiliate, Ford, Bacon & Davis, Engineers, in a report dated March 20, 1900, determined to "...review the construction and operation of these (DSR and SRTR) properties...." The report revealed, "In Superior there are (only) four miles of good track. The remainder (about 22 miles of track) is 35# T (rail), mostly narrow gauge. The Superior car equipment is in bad condition and will need extensive repairs. The Superior management is at the mercy of run-down construction and equipment."

The report indicated that conditions in Duluth were not much better.

Wages DSR

Strike on 8-15-92 present scale $1.75 per day. Want $2.00

Scale 4-28-1900
- 15¢ new hirelies
- 16¢ " "
- 17¢ after 6 mo.

Scale eff 5-1-1900
- 19¢ new
- 18¢ after 6 mo.

" " 1-1-06
- 20¢ new
- 21¢ after 2 yrs. servic
- 22¢ " 5 " "

" " 4-1-10
- 21¢ first year
- 25¢ thereafter

~~Substitutio/noise 1-1-12~~
probably
- 10¢ trainees
- 26¢ ~~first year~~

Scale ~~eff~~ 2-15-16
- 23¢ first year
- 30¢ max

" " 10-4-16
- 25¢ first year
- 32¢ 6 yrs

" " 10-4-17
- 29¢ first year
- 36¢ 6 yrs or more

12-15-17 Working hours reduced from 12½ to 11½ hours

Superior eff Dec. 4, 1912, 6 for 25¢ tickets by order of WRC

Fares

Fares, June 21, 1920 Voters defeated 6¢ fare ordinance

Oct 4, '20 Second defeat of 6¢ fare ordin

Oct 11, '20 Service reduced. Owls discontinued see 4.6

Sept 1, 1921 6¢ fare in Superior

Sept 1 " " " " Duluth

Sept 10 " " " discontinue in Duluth district court, judge

Aug 1, 1922 6¢ fare returned in Duluth

Sep 7, 1922 5 tickets for 30¢ @ 5¢ coupon " .

Oct 1, 1923 5 for 30¢ tickets, 10¢ cash in Superior

Oct 1, 1923 Cleveland fare boxes, in Supe & PAYE

Dec 10, 1923 Judge O'Brien, Master Chancery approves 6¢ fare as fixed by WisRRCom

May 14, 1924

June 4 " Hearing, Judge Booth ~~Mpls~~ St. Paul

Dec 29 " Judge Booth of Federal Court sustains 6¢ fare in Duluth

Oct 4 1926 MinRRWC orders 8¢, 5 for 35¢ tokens in Duluth

Oct 15 1926 " " Becomes effective → Fare Boxes put on cars not previously equipped

Jan 1 1928 Superior 8¢, 7 for 35¢ token

June 15 1935 New transfers

Finance

Last bonds, to finance [redacted] Riverside/Moreau Park [redacted] line construction and lease of 6 cars from TCRT sold for cash $50,000 in Feb. 1917 @ 92

Then another new issue $40,000 par value afterward [redacted] used to pay for Park Point line.

Fares

Double (10¢) fare charged on newly-opened Morgan Park line, June 12, 1916
City objected. 5¢ fare returned Jan. 1, 1918

See also 2.19

Fares — Fare increases/modifications, always controversial, sometimes litigious... their pursuit was time-consuming and often distressing

School children's limited 5¢ fares begun Sep. 3, 1929

6 for 25¢ tickets in Superior by order of RR Comm of Wis 12-4-1912

10¢ fare when Morgan Park line operational 6-12-16
Reduced to 5¢ when G.N.D. " " 1-1-18

Fare reduced to 5¢ when DSR took over operation of PP line 9-1-17

DSR 6¢ fare defeated by voters 6-21-20 in Duluth
" " " " " 10-4-20 service reduced 10-11
6¢ fare in Superior 9-1-21
" " " Duluth 9-1-21
" " " " ordered disc. midnite 9-10/11-21 by Dist. Court Judge 5¢ restored
" " restored in Duluth 8-1-22
challenged again in courts
5 tickets and one 5¢ conditional coupon sold for 30¢ in Duluth 9-7-22

Meanwhile In Superior 10¢ cash / 5 tickets for 30¢, effective 10-1-23

12-10-23 Judge O'Brien reports Duluth 6¢ fare valuation as fixed by Commissio
5-14-24 " Booth (St. Paul Federal Court) " " oral arguments postponed to
6-4-24
12-29-24 " " sustained 6¢ fare in Duluth

Minn R&WC orders 8¢, 5 tokens for 35¢ eff 10-15-26; All cars in Duluth and buses were now equipped with fare boxes.
Wis RC grants 8¢, 5 for 35¢ fare in Superior 12-3-27
Became eff 1-1-28

5¢ school children's fares in Superior 8-31-31

New form of transfers put into use in Duluth 6-15-35
" " " " " Superior 9-21-35
" dated " " " in Dul. & Sup 7-5-39

From Annual Reports

Rates of fare

Duluth 8-1-23 5 tickets for 30¢ with 5¢ coupon attached
10-15-26 Duluth 8¢, 5 for 35¢ tokens or ticket

1-1-28 Superior " "

9-1-29 established 5¢ school fare

5-6-29 Superior & Duluth 10¢, 6 for 45¢

10¢ Morgan Pk/ & New Duluth fare
charged until 1-1-18

10-1-23 Superior: same as Duluth plus 10¢ cash

1-1-42 D & S 6 tokens for 45¢

? " 6 " " 50¢ 10¢ cash

8 1/3¢ 12-13-48 " 7 " " 75¢ 11¢ "

10 5/7¢ 1-29-51 " 2 " " 25¢ 13¢ "

12 1/2¢ " school fare 8¢

Franchise was validated in State Supreme Court in Feb '15 after 3 yrs litigation

Employee benefits

Eff 6-1-17 DSR began a pension plan, group health insurance, and a war bonus was paid

Eff 6-1-25 began paid vacations

12 1884 Apr 24 DCSR Incorporated by Gen J. H. Hammond for $20,000 Fares
12 1884 Mar 24 Franchised by Town Bd of Superior Finance
Audit 1892 Aug 12 4,050,000 pass carried in Duluth in '92
12 1892 Sep 10 SRTR Co organized — SRT succeeded the DCSR
10 887 Apr 1 ~~See page~~ — H. D. Minot gained control of DCSR
see 3/24/33
1893 Mar 24 Interstate fare 10¢ Fare structure, wages, strikes, revenue
~~1893 July 21 End of free transfers~~
1891 June 21 Change of controlling interest (see 6/21/11)
~~1893 Dec 25 Transfers restored~~
1893 Sep 1 Strike of carmen (see 12/20/13) (compromised) settled 9/4
1893 Nov 17 Herbert Warren appt Gen Mgr (see 11/17/13
1898 July 7 Receivership 8-29-93 Depression 20% reduction in wages eff. 9/1
1893 Dec 22 Crossing bay on ice (see 12/22/13)
1899 May 3 Strike of carmen (union broken) Audit 3-20-00
Audit 1892 Oct 1 ~~Garfield Ave revenues (see 10/1/32 and 10/13/32)~~ Report of Ford Bacon & Davis states: "it would seem that too much expense has been put on maint of car equipment and too little on track. The Sup. management is at the mercy of run down ~~equipt~~ construction and equip.
1900 Aug 13 DSR Co & Sup Div and D-S Traction Co consol & reorg
1903 Aug 19 Help Wanted ad - wages C.G. Goodrich Pres ~~[illegible]~~ 6/29/00
1902 June 25 Passengers carried DSR
~~June 26 " " Park Point~~ loss of an ~~[illegible]~~ appeal from an order of the RR Com of Wis
12 Dec 4 6/25¢ tickets in Superior ff
04 July 4 Passengers carried DSR
05 Dec 28 Wage increase
~~05 Dec 6 Park Point [illegible] also 1/4/08 [illegible]~~
~~15 Mar 14 1st [illegible] appeared on streets of Duluth~~ Revenues reduced & Superior 20% 4/1 to 9/30
9 Jan 1 Anti-pass law
7 June 12 10¢ fare on newly opened rte 14 west of 49th Ave W.
~~10 Feb 10 Financial statement of Park Point~~
10 Feb 5 " " " of DSR (see 2/5/30)
10 Mar 15 First use of TPE Lines Twin Ports Electric
10 Apr 10 Help Wanted - wages
17 May 31 Group life ins. on employees eff.
11 Apr 11 Old Timers organized at Metropole Hotel
1929 12 May 20 Strike
12 Sep 9 - Nov 6 ~~[illegible]~~ Strike, Open shop retained
17 June 1 War bonus of 5% & 10% put in effect
~~13 Feb 21 Park Point financial difficulties (see also 2/24/33)~~
17 June 1 Pension plan " "
17 Sep 1 Park Point line acquired by DSR Fare reduced to 5¢
17 Oct 1 Coupon ID checks issued to all employees
13 May 16 Fares for police - and fire-men
17 Oct 1 Conductors allowed to sit in sitting-down districts
13 July 5 60 hr week in Wisc.
17 Oct 1 10-min turn-in time added to runs
~~14 Feb 28 Park Point financial statement~~
18 Jan 1 Morgan Park - Gary - New D fare reduced to 5¢
14 May 23 DSR franchise ~~problems~~ court test
~~15 Jan 18 Park Point financial statement~~
15 July 24 Assessed valuation
~~[illegible] Jan 26 Park Point financial statement~~
16 Jan 27 Changes in management
16 Feb 15 Wage increase
15 Dec 21 C.G. Goodrich died. A.M. Robertson succeeded ~~to~~ pres.

US Supreme Court upheld TCRT in fight against City to force sale of 6 tickets for 25¢, thus validates DSR franchise: the terms of DSR being in all aspects the same as TCRT's (fare now 5¢, book of 100 tickets available at no savings)

Fares, Revenues, Organization

1919 Apr 1 Duluth voters voted 8566 to 4688 against municipal ownership. Fare increases requested to offset post-war increases in wages & costs

1917 Sep 27 Fringe benefits (report in 1917 Co. annual report

1917 June 14 647 employees

19 Dec 7 Financial report

~~Post~~ Increased War costs. Reduction of service (reported in 1918 Annual Report

1919 Aug 19 Organization of Employees Athletic & Protective Assoc of TPEL

20 June 21 Duluth 6¢ fare ordinance defeated by voters

20 " " One-day strike of employees on acct of City's failure to extend relief

20 Oct 4 Second Duluth 6¢ fare ord. defeated

21 Feb 4 First use of tokens?

21 Sep 1 6¢ fare in Duluth & Superior

Sep 10 " " " " ordered 5¢ fare restored at midnite Sep 10-11 by District Court judges

22 Aug 1 6¢ fare put in effect in Duluth

Sep 7 5 tickets for 30¢ in Duluth plus 5¢ conditional coupon

24 Jan 3 Conductorettes

23 Oct 1 10¢ cash fare & 5/30¢ put in effect in Superior. Cleveland fare boxes on all local Sup. lines

Aug 21 Turnstile troubles

24 Mar 16 $500,000 par value $100 7% stock opened & fully subscribed in 22 days

Dec 10 Judge O'Brien reports 6¢ fare & valuation as fixed by Commission

24 May 14 Duluth rate case goes to Judge Booth, St Paul for hearings. Postponed.

Apr 25 Pay-as-you-enter

June 4 " " " heard by " " "

Dec 29 " 6¢ " " sustained by " " & valuation of $5,009,510 as of 7/31/21

25 Jan 1 Financial & tragic statement.

5 — $500 license fee ended jitneys in Superior

? Fares

1926 June 23 Hearings by Minn RR & Whse Comm in Duluth rate case
Oct 4 " " " " orders fare increase, value $5,291,710
Oct 15 Effective fare: 8¢ cash, 5 tokens for 35¢
~~Fares boxes placed on cars~~
July 1 Wages of carmen increased 46-52 cents per hr., others about 5%

1927 Dec 3 Wis Comm granted 8¢ cash, 7/35¢ token fare in Sup
28 Jan 1 " " " effective in Sup.
29 Sep 3 School kid's limited 5¢ ticket put in use
29 May 1 Fare increase (see 5/1/39)
1930 Apr 1 Transfers permitted to & from Interstate buses
Oct 1 DSR bus drivers allowed same pay rates as DSC drivers
May 1 Bonds of Co. matured. Defaulted on payment on principle & 6 mo interest
2 Into receivership. O. Mitchell appointed Receiver

1931 Aug 31 5¢ school fares begun in Superior
32 Jan 1 Retrenchment: Paid vacations curtailed. Platform pay only: no pull-in, pull-out ~~[illegible]~~ HO wages reduced 5%
June 2 Superior Day — free fare into town 9 a.m to 4 p.m

33 Apr 17 Stop over transfers begun West End east-bound only
July 26 Further wage reductions for carmen
35 June 15 New type transfers in Duluth
3 Fares 37 Sep 1 First working agreement w/ Local 1128 Amal Assn of SEP

Audit 1881 Nov 18 DSR franchised to construct & operate

Audit 1881 Oct 25 DSR incorporated for 50 yrs ~~under~~ under the general RR law of the State of Minn.

1884 Mar 24 ~~Sec~~ DCSR franchised

1884 Feb 25 ~~Apr 24~~ DCSR incorporated

38 Mar 8-16 Efficiency experts (Stone & Webster Service Corp

July 1 Employee passes replaced coupons

1887 Apr 1 Control of DCSR - H.D. Minot gained.

No settlement. Union broken. Men returned 4/19

1889 April 13 TCRT strike. Did not spread to Duluth, tho rumored

1893 July 21 End of free transfers

" Dec 19 Return of " "

1894 July 30 New transfer form

1895 Sep 16 " " "

1896 Jan 26 SRT went into receivership

(Very little actual construction done, probably, until 1889)

~~1887 Aug 22 City authorized location, construction & equip of DCSR.~~

~~1889 July 9 " " change of route~~

Time-date-line stamps were used on cars
(see Correspondence book 6-30-03 pp 19

4 Fares

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West Superior West Superior Rapid Transit 3.1 3.10
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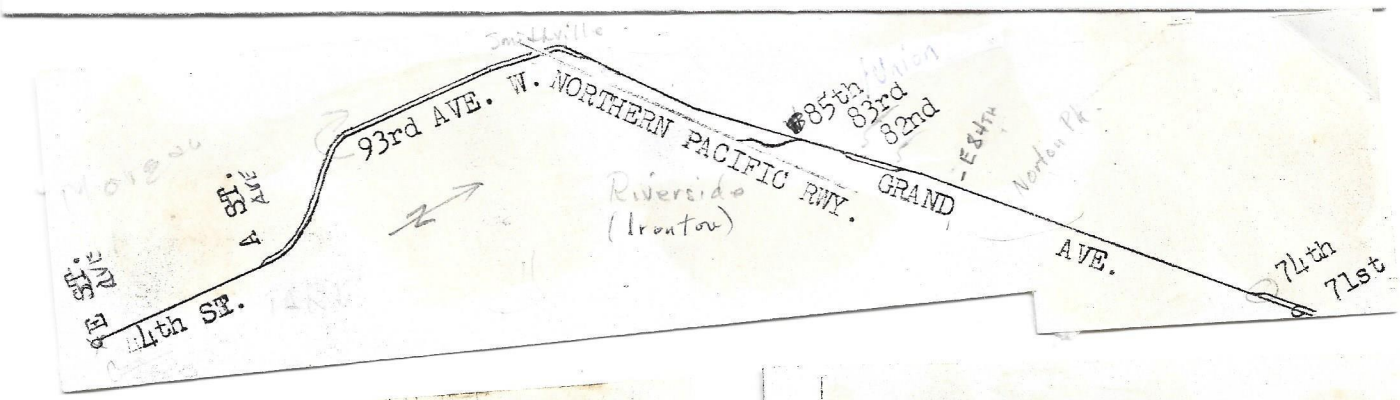
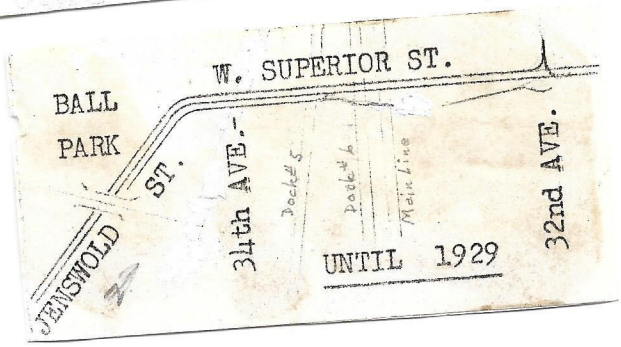
Wreeks

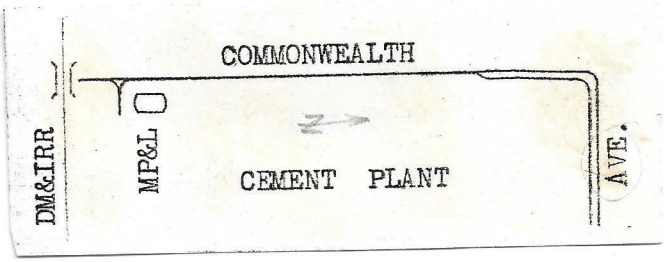
SECTION 2

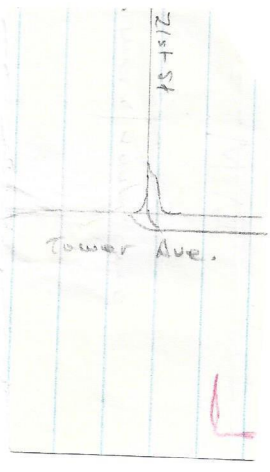
The following 6 PDF pages consist of several diagrams planned for insertion into various locations in Sections 2 and 3. They are stored in an envelope at the beginning of Section 2. The first, third, and fifth PDF pages are the diagrams while the second, fourth, and sixth PDF pages show the reverse sides of each diagram with notations as to where they are to be placed in the final product.

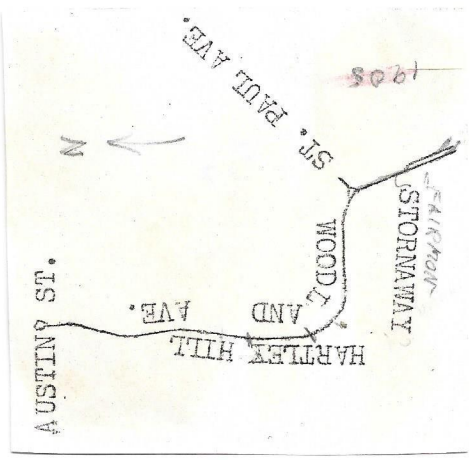
Illustrations for Section 2 & 3

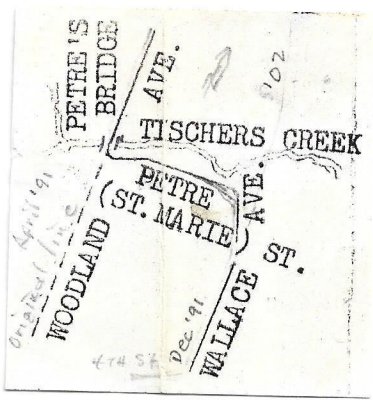




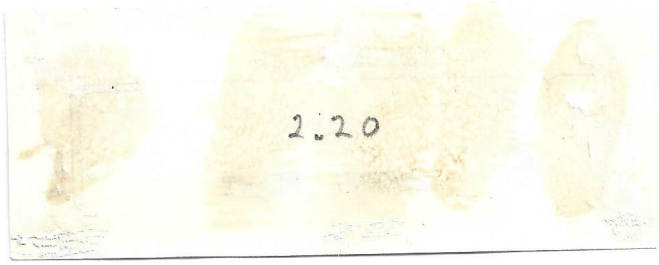


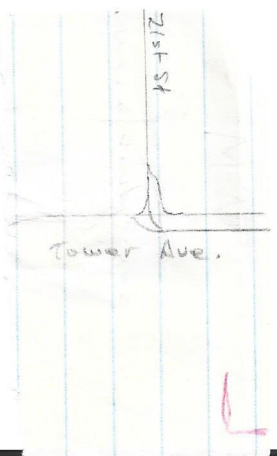


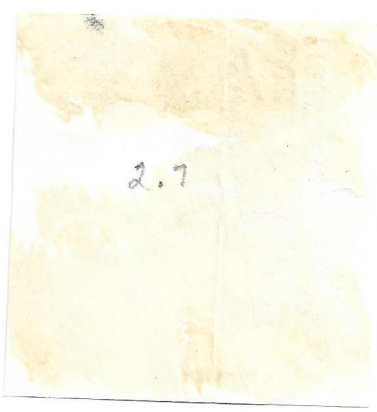


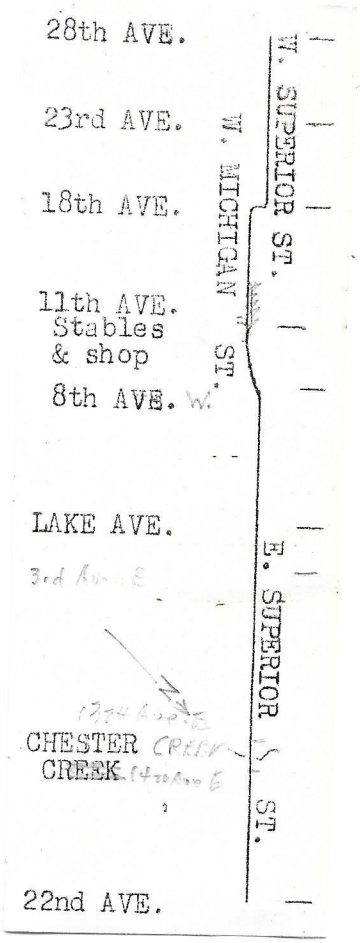


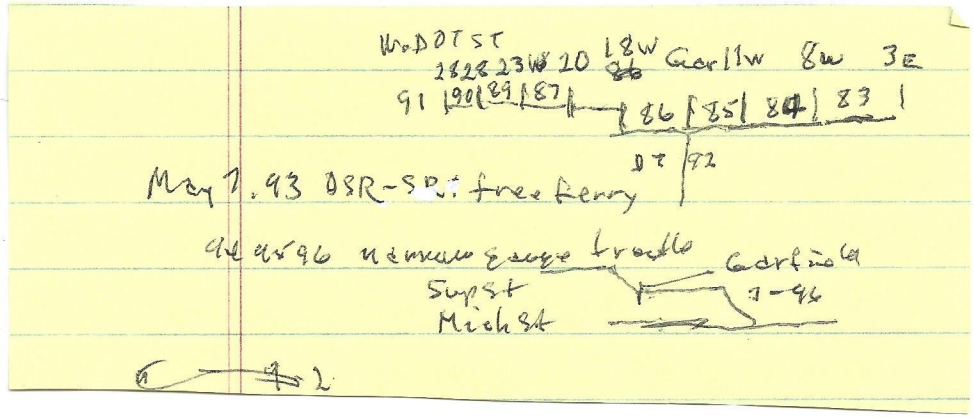
Illustrations for Section 2 & 3

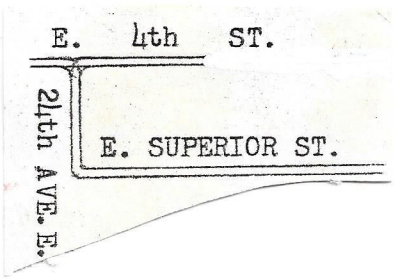


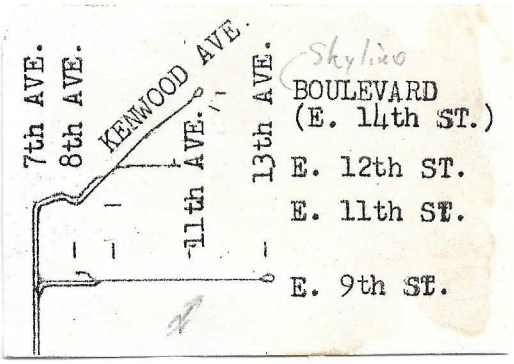


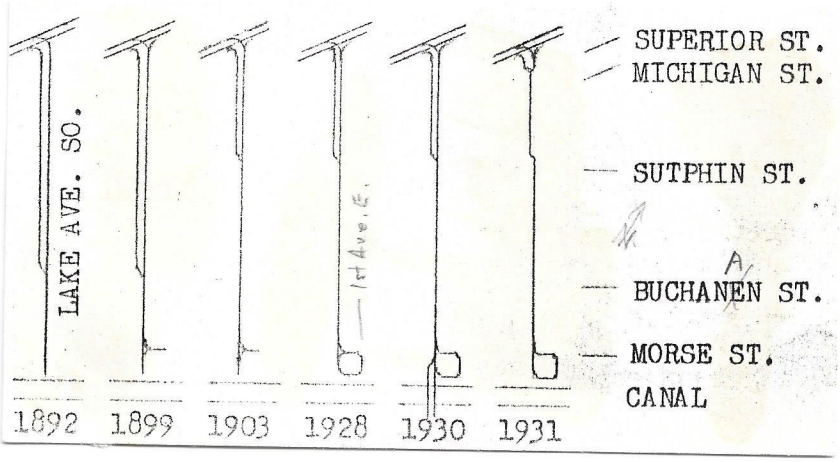


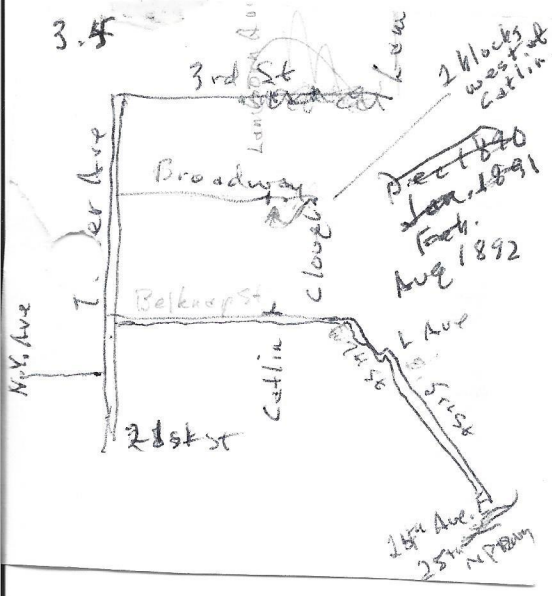

28th AVE.
23rd AVE.
18th AVE.
11th AVE.
Stables
& shop
8th AVE.
LAKE AVE.
3rd Ave. E
CHESTER CREEK
22nd AVE.
W. SUPERIOR ST.
W. MICHIGAN ST.
E. SUPERIOR ST.

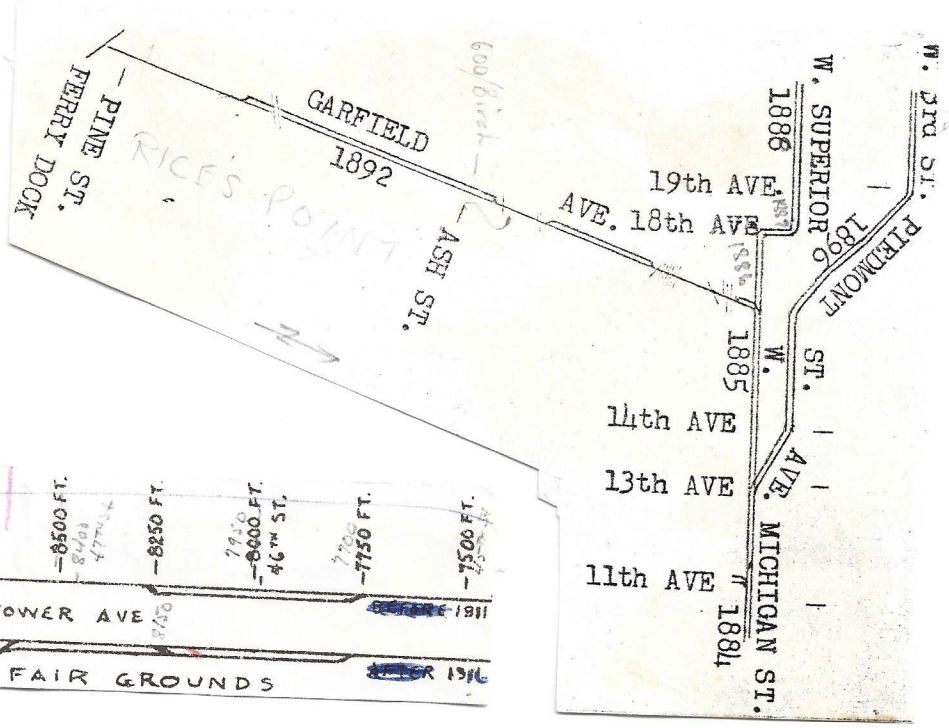

WoDOT ST
2828 23W 20 18W Gar 11W 8W 3E
91 90 89 87 86 85 84 83
May 7, 93 DSR-SP: free ferry
94 95 96 narrow gauge trouble
Garfield
Sup St
Mich St
7-96

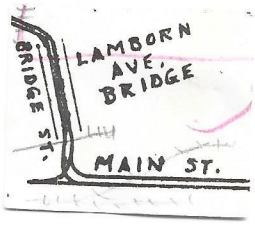

E. 4th ST.
24th AVE. E.
E. SUPERIOR ST.

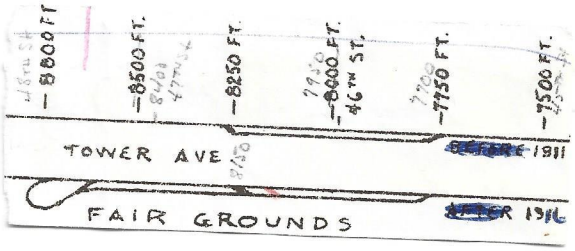

7th AVE.
8th AVE.
KENWOOD AVE.
11th AVE.
13th AVE.
Skyline
BOULEVARD
(E. 14th ST.)
E. 12th ST.
E. 11th ST.
E. 9th ST.


LAKE AVE. SO.
1st Ave. E.
SUPERIOR ST.
MICHIGAN ST.
SUTPHIN ST.
BUCHANEN ST.
MORSE ST.
CANAL
1892
1899
1903
1928
1930
1931

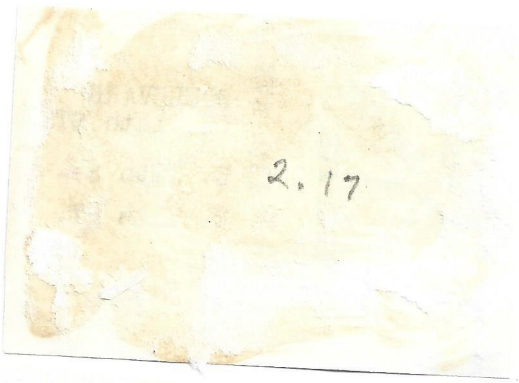

3.4
3rd St
Broadway
Belknap St
Catlin
Clough
2 blocks west of Catlin
Dec 1890
Jan. 1891
Feb.
Aug 1892
L Ave
21st St
14th Ave.
25th
N.P. Ave


PINE ST.
FERRY DOCK
GARFIELD
1892
ASH ST.
RICE'S POINT
600 Birch
19th AVE.
AVE. 18th AVE
W. SUPERIOR
1888
1896
W. 3rd ST.
PIEDMONT
1885
W.
ST.
14th AVE
13th AVE
11th AVE
AVE.
MICHIGAN ST.
1884


LAMBORN AVE. BRIDGE
BRIDGE ST.
MAIN ST.


8800 FT
8500 FT.
8250 FT.
8000 FT.
46TH ST.
7750 FT.
7500 FT.
TOWER AVE
1911
FAIR GROUNDS
1916

2.1



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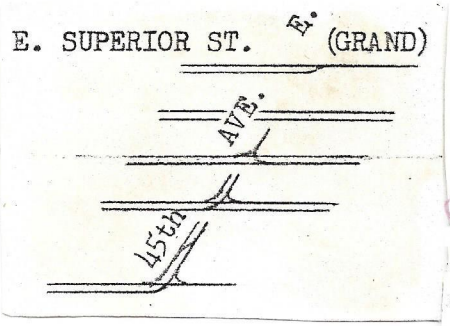


As built in 1892

Double track extended to 61st Ave. E. in 1909

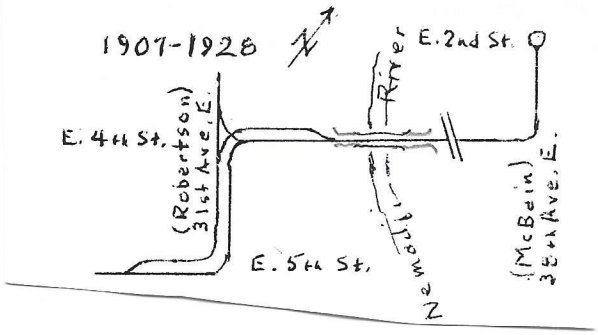
Wye installed at 45th Ave. E. June 27, 1917

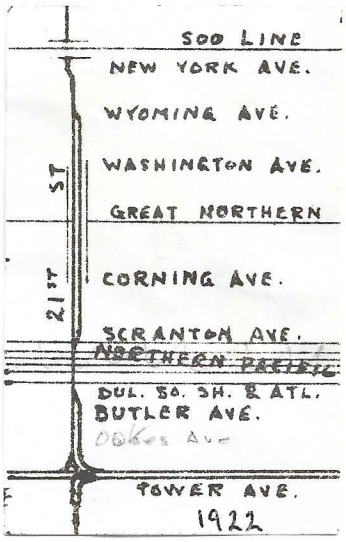
Crosley line built October 1, 1926

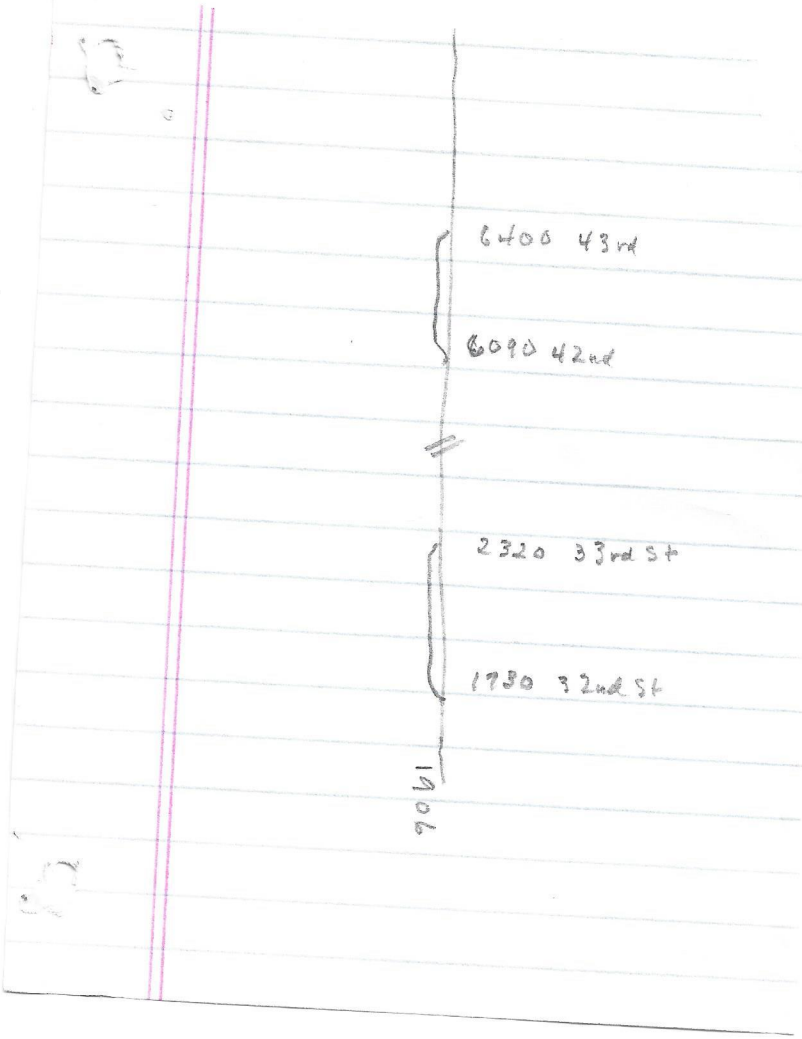
Lester Park line abandoned August 25 1931.

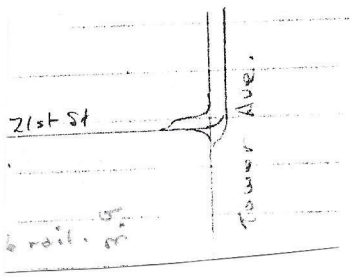
Crossover installed in October 1934 for double-end shuttle-car operation on Crosley line.

on 61st Ave. E the

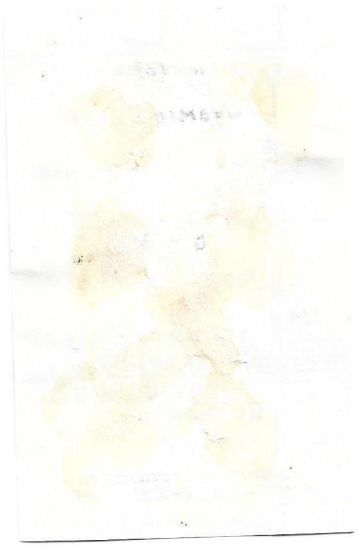


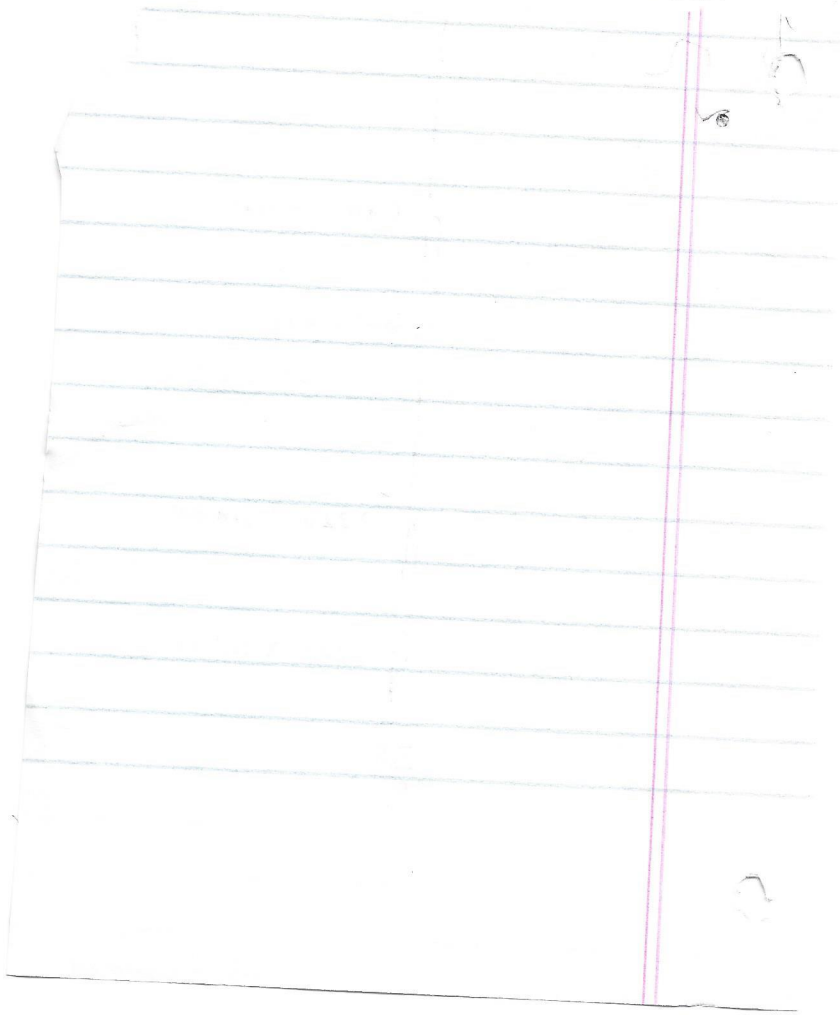






2.10





action on October 25, 1881, in as much tracks had begun at 8th Ave. W. the next day, with the work "to be finished in thirty days..." How much track was laid that fall is not known.

The first of 3 mule cars 1-3 was purchased — second hand — from St. Paul City Ruy., and arrived in Duluth via the St P&D Ruy. on November 22, 1882, was brought up 5th Ave, W. and placed on a short length of track on Superior St, 4 days later (see 5.1). It is believed that this car, pulled by a mule, was operated for a short time before winter forced a halt to operations — and track construction. The car was left standing on the street near 5th Ave. W. all winter.

The well-intended optimism that came with the '83 spring time ran

SECTION 2

RAIL LINES: DULUTH

Duluth was growing at an irrepressible rate- from a mid-depression era low of 1,300 inhabitants in 1873 to 13,000 ten years later, and was moving into new areas of developing land. The cluster of early-day carpenters, stone-masons, railroaders, builders, inn-keepers, seafarers, physicians, servants and their dependents were for the most part, however, compactly settled in several adjacent communities, chief of which was the one bounded roughly by 8th Ave. E., 4th St., the Point of Rocks and the Lake and Bay. It was this community that was to be served, hopefully, by the builders of Duluth's first street railway. Looking ahead, there were plans to extend this service soon to the nearby village of Oneota--which had been established in 1854--and thriving communities on Rice's Point, that close-in portion of Minnesota Point--referred to early on as Middleton--that was to become later as Lake Ave. S., and the East End communities of Portland (10th Ave. E.), Endion (19th Ave. E.) and the far-east community of Lakeside.

In those early days of 1882, the municipality had established these priorities: a system of sewers, water works and water mains, electric streetlights, graded streets with sidewalks, a fire department with a steam pumper, an effective police force, a park or two, an opera house, and last, but certainly not least, a street railway.

2.1 ORIGINAL HORSE CAR LINE (NARROW GAUGE)

Although they were a common means of transportation, there are little or no references to the early day use of horse-drawn surreys, commonly called hacks, on the streets of Duluth and Superior. Nor are there records of sleighs in the winter or of herdics, a rear-loading carriage with a pair of facing seats/benches. But surely--in spite of an otherwise dirth of information--there were many of these and other types of omnibuses on Twin Port's streets before and during the horse car era (See 5.4 for descriptions of horse cars and animals, and 4.12 for their operation.)

The Duluth Street Railway Company (DSR) was incorporated on October 25, 1881 "...to construct or acquire by purchase, lease or otherwise...street railway lines in and over the streets and highways of the City of Duluth and its suburbs...". (See 1.7 for its officers). A fifty-year charter, secured November 17, 1881, from the State Legislature, provided that the grant should be forfeited wholly if, within one year from the date, one mile of the road was not constructed, equipped, and in full operation.* Members of the corporation unanimously accepted the "...rights, privileges, and franchises conferred upon them by the terms of the Act of the Legislature of Minnesota..." on December 5. The State Legislature initiated this action inasmuch as Duluth was yet a village. The Village did not prescribe, seek or receive specifications on type of track or manner of construction from DSR.

In preparation for construction of the narrow gauge (3' 6") street railway, a local contractor, A.B. McLean & Co., initiated a survey on August 5, 1882 for one mile of track on Superior St. east from "the quarry" at 8th Ave. W., prompting the Duluth TRIBUNE on the same day to editorialize, "A street railway is an assured fact in Duluth within a few months." The survey was completed September 11. Contractor Major Wilson, of Wilson, LeMay & Son told a Duluth TRIBUNE reporter on September 12 that construction of the tracks would begin at Lake Ave. the next day, with the work "...to be finished in thirty days." But the well-intended optimism ran into wholly-unexpected, formidable obstacles immediately. The Duluth Gas & Water Co. was franchised on March 3, 1882 (for 35 years) and had become actively engaged at that same moment in the laying of sewer, water, and gas mains in Superior St. And the City found it necessary to re-establish many of the

* 1) In an action soon after receiving its charter in February 1870, the Village, on October, granted a 75-year street railway franchise to a group of prominent citizens. 2) An 'exclusive' franchise was granted, April 19, 1873, for a line to be in operation by October 1874. No action followed either of these grants.

grades at intersections of steep avenues that crossed it. The conflicts wore on through much of the summer, and with the exodus of much labor to wheat fields and lumber camps, and the coming of cold weather, construction of the track seems to have ground to a halt in November. Council on December 23 extended to May 15 of the next year DSR's charter for completion of the rail line.

With the coming of spring (1883) came new enthusiasm, prompting the Duluth TRIBUNE of May 18 to note, "There has not been...a business failure here in two years. What other city of its size (16,000) can say that!?" 150 ships arrived in May, six railroads were serving the city, and there were 12 large sawmills, a blast furnace, and 3 grain elevators with a capacity of 3,000,000 bushels.

Wilson, LeMay & Son* resumed construction of the single-track street railway on May 14, with 28-pound rails laid from 8th to 5th Avenues W. by May 23, and to 1st Ave. W. by May 27. Turntables (see also 3.18) arrived July 1, and were installed in the streets the next day.

Trial runs were made by two horse cars on July 5 (1883).

Scheduled service began on the stormy next day when mules began clopping along one mile of track on Superior St. from 8th Ave. W. to 3rd Ave. E.

2.2 NARROW GAUGE EXTENSIONS

Simultaneously with the prolonged construction of the tracks on Superior St., agonizing progress was being made to extend the tracks west toward Garfield Ave., referred to then as Third St., Rice's Point. The chief obstacle on this main road/street between Duluth and the Rice's Point community was a "point of rocks" on Michigan St., between 10th and 11th Avenues W. (not to be confused with the better-known mass of the same name of later days near 14th Ave. W.) Samuel Osborn forfeited a surety bond as contractor for cutting through the "point of rocks" at 10th Ave. W. when he found the task too formidable. In response to a Council request, the City Engineer furnished a plat of Michigan St. from 8th to 12th Avenues W. on December 23, 1883, which evidently underscored the difficulties involved on this portion of Michigan St., which at that time was known as Piedmont Ave. West. These difficulties included, also, the need for two bridges, at 12th and 15th Avenues W., referred to them as Bridge No. 1 and No. 2. These obstacles were removed, the grade lowered, the street widened during the spring of 1884 to everyone's delight, particularly to DSR's satisfaction, thus providing a much-improved and satisfactory roadway for DSR's tracks--no small task. This allowed the laying of tracks from 8th Ave. W. to DSR's stables and shop between 11th and 12th Aves. W. that had been built that spring. Service on the single-track extension began June 24, 1884.

Single-track extensions were added in both directions during each of the next six years (see also 3.26 and 3.28). Unfortunately, however, company records do not give precise dates or conditions of these extensions. Council, by resolution of October 3, 1883 (when DSR was still struggling to reach 11th Ave. W.) ordered the original line extended to 24th Ave. W., "...as soon as West Superior St. is completed..." However, track extensions toward Rice's Point and West End came about slowly. The rails did not reach Garfield Ave. until 1885. A second track was added on Michigan St. between 11th and 13th Avenues W. in 1888 to relieve congestion in front of the company's shop and stables. Pushing on into West End in the next two years, the tracks continued west on Michigan St. to 18th Ave. W., north to Superior St., thence west again on Superior St. to 23rd Ave. W. by October 31, 1887, thus satisfying a Council order of October 3. By April 1889 the tracks had reached 24th Ave. W., and in November they reached 28th Ave. W., satisfying a Council order of September 16, 1889. DSR records, for some unknown reason, do not reflect this final extension of the horse car tracks, recording it instead as an interim horse car extension of the 1890 standard-gauge electrification.

In 1886 the original line was extended east from 3rd Ave. E. to 13th Ave. E. on Superior St., referred to then as Bench St. east of 8th Ave. E. until August 1891. In May 1888 tracks were laid from 14th to 22nd Aves. E. This, at that time, was a shuttle line, inasmuch as nothing more than a foot bridge existed across the Chester Creek ravine between 13th and 14th Avenues E. In the summer of

* Some company records show "Built by A.B. Chase".

operation,

~~Last~~, with sufficient horses and horse cars to maintain a five minute headway on the line.

~~cars.~~

~~Final operation of horse cars was on~~

the following year this obstacle was eliminated, and transfer of passengers was no longer necessary when through operation began on September 3.

How much of this now-fully-extended horse car line was double track is not recorded. Company records show 4.22 miles of track by 1888, [illegible] Photographs of the era, however, indicate that some of this could have been double track, with passing tracks provided on single-track portions. [illegible]

This then was the extent of the narrow-gauge horse car line in the closing months of the 1880s,

OK

178 mules/horses were used to haul the 15 horse cars in their final days of operation, Several horse cars remained temporarily for the 23rd to 28th Avenues W. shuttle during the transition period. Horses replaced mules in 1889.

During the early years of horse car operations (1883-85), cars, repair parts, equipment, rail and mules had been purchased, for the most part, from the St. Paul City Railway Co. (see 5.1).

2.3 REQUESTS FOR A HILLSIDE LINE

Duluth's population had grown quite rapidly in the late 1880s, to 33,115 by 1890—had multiplied nearly ten times in ten years! The residential and commercial expansion of the city had gone beyond the borders of the lake, bay and river...certainly far beyond the area served by the horse car line. And much of this growth was up along the central hillside, where demands for a rail line extension had become especially strong. On March 5, 1889 Mayor Sutphin addressed the Council, "The time has come when that part of the city above Superior Street demands street car conveniences, and I think the population and growth of the city in that direction will justify you in ordering the line built. I therefore recommend that you take steps looking to the construction at an early day of track extending as far up as Ninth Street on such avenue as shall be designated by your honorable body."

The mayor's message moved the TRIBUNE to editorialize twelve days later, "The recommendation in Mayor Sutphin's recent message...is a good one, and ...the benefits to be derived from an extension of our street car lines are far greater than most persons imagine who have not had their attention specially called to the matter. The truth is that street cars cut a very important figure in the building up and in the daily life of a city... In the first place, a large extension of our street car lines is urgently demanded as a simple matter of convenience. The present line should in all fairness and reason be extended at once... In the second place, a line of cable cars is badly needed, running from the canal northward on Lake Avenue to the brow of the hill and to a point...further back. Then, too, Fourth Street is rapidly assuming sufficient importance as a business and residence street to entitle it to some consideration at the hands of our street car company and Council...this street has upon it twenty-one prosperous stores...which is a much larger number than that of which First Street can boast..."

The city was stirred aright. Ten days later, on March 27, a petition signed by 83 prominent citizens was presented to Council (and referred to its committee on railroads), "...that the DSR be requested to build a street railway up the hill on Lake Avenue."

The hue and cry was picked up now by citizens' groups, real estate promoters, and other pressure groups. Perhaps some of this agitation was more selfish or emotional than practical in these spring days of 1889. Extensions in both directions on Superior Street were no great problem. But finding a means to carry passengers up and down the steep hillside was a matter not easily resolved.

DSR had no plans to build a line on the hillside, and probably for good reason. It had given strong arguments against any such plans, one of them being the company's contention that the electric motors available at that early stage of development of trolley cars were not yet sufficiently powerful and durable enough to meet the demands of hauling a car on steep grades such as those on Duluth's hillside. Mules or horses certainly could not have pulled cars up the steep 10% grades.

Cities like Superior, Minneapolis, and Chicago found it relatively easy to extend rail lines on their relatively flat topography, and were limited only by economic considerations. But for cities like Duluth, Pittsburgh, and Cincinnati, the hills, bluffs, ravines, and rock outcroppings formed formidable obstacles not easily resolved by the limited technology of the day.

Two years earlier, in March 1887, the Highland Cable Co. had been incorporated with the intent of building a cable car line on Lake Ave. A franchise was granted March 22, and some grading was done. But, when financial backing was not found for further development, the plan stalled and the line was never built.

Then on January 25, 1889 the Metropolitan Street Railway Co. was incorporated with a sole purpose of obtaining a franchise to build street car lines in competition with DSR.

The forces were at work, hoping to do what DSR was not able or willing to do. If the Minneapolis-based management of DSR did not perceive the pulse of the people or was not convinced that these were forces to be reckoned with, they certainly must have reconsidered when petitions were circulated on March 29 asking for, "...the compulsory building of a street railway on Fourth Street from Fifth Ave. West to Massachusetts Ave. (27th Ave. E.)...they consider six months from May 1 as reasonable time in which the company should signify an intention to build and operate the line, and after that date they wish the council, if nothing be done (by DSR), to grant the Metropolitan Street Railway Co. the privilege," ...HERALD.

Some good news was forthcoming a month later when manager Chase of DSR announced, "Within thirty days we will begin extending the (SUPERIOR ST.) line at either end, having given orders for the material already..." It is obvious that he was not yet convinced that a line should be built on the central hillside, for he added, "However, I fail to see how people would be benefited by a Fourth Street line, without a line to take them up and down the hill."

Even as late as January 1890, DSR maintained this attitude. The NEWS of January 17 reported, "The matter of putting in car service on Fourth St. and up Tenth Ave. E. is still away off...it will be necessary to discover the most feasible way of getting up to Fourth St..." No doubt this was DSR's reaction to St. Paul's costly and quite unsatisfactory cable car operations that had begun in December 1887.

2.4 ELECTRIFICATION and CONVERSION

Although the horse car had been a timely and helpful device in the development of urban areas, its service was highly inefficient, costly (see 5.40), slow, averaging only about 4 miles per hour, and an unsanitary nuisance. In the several years prior to 1888, there were, nation-wide, many experiments with electrically propelled cars. These trials and errors were conducted under widely-varying circumstances and with varying degrees of success. As early as August 1886, Appleton, Wisconsin had experimented with spasmodic local operation of an electric street car. None of these tests, however, were able to completely resolve the mechanical and electrical problems that limited and plagued the early development of the electric street car.

Then, on the evening of February 2, 1888, in Richmond, Virginia, Frank J. Sprague and his associates began the first successful operation of electric street cars, made possible by combining the five major elements necessary for this momentous event:

1) Central power plants of sufficient capacity to operate several cars simultaneously.

2) A means to transmit the electric power from the generating plant to the cars at any and all points on the lines.

3) A satisfactory method to collect the electric current for the motors as the car moved along the street.

~~receipts of the company previous to this strike were about $650 per day.~~ problems, This strike lasted several weeks and was accompanied by a considerable amount of disorder and violence. It is estimated that the curtailment of service during the strike resulted in a loss of receipts of $5,029.56. The cost of this strike, exclusive of loss of receipts, was $9,211.74, making the total cost of the strike $14,241.30. Tom

4) Motors of sufficient horsepower to propel a loaded car up demanding grades for an extended period of time--without overheating or stalling.

5) A mechanism capable of continuously controlling the speed of the motors.

After much misgiving and some last-minute failures, the Richmond operation had become successful overnight, figuratively and literally, for the test run was at night when the streets were deserted and hypercritical citizens were not about. Not only was Sprague able to overcome the many difficulties, but the cars were able to operate on 10% grades--steeper than would be found on most electrifications that were to develop rapidly in the months that followed.

The dawn of a new era had indeed arrived. Following this success, a great wave of conversion from cable--steam--and animal-powered cars to electric operation swept the country.

When Sprague offered a guaranteed electric street railway operation to Minneapolis St. Rwy., the Minneapolis City Council, on September 14, 1889, passed a resolution authorizing MSR to string trolley wires on its 4th Ave. S. line "as a test" of this new form of transportation. The conversion progressed rapidly, and the first electric cars operated on Christmas Eve. Less than two months later, on February 22 electric cars were operating on Grand Avenue in St. Paul. In one year all horse cars had been replaced in The Cities. As might be expected, these developments only added fuel to the fire in Duluth.

But, still other events were muddying the already troubled waters in Duluth. Thomas Lowry had a controlling interest in the DSR at this time. Tom Lowry, great man, who was to determine and guide the destiny of Minneapolis and St. Paul and who was to develop the Twin City Rapid Transit Co. into one of the greatest--if not the greatest--street car systems in the nation. Lowry had set his standards high, and because of these high standards, TCRT's electrification had become the national standard, vaunted and admired and copied by transit officials far and wide. But the excellent standards of TCRT electrification had been costly, considerably more than originally expected. A bitter ~~one-week~~ strike of car men in the Spring had compounded his problems. Tom Lowry was in a money crisis as 1890 dawned, and probably reluctant to finance electrification in Duluth.

Then on February 10 Manager Chase received word that Tom Lowry had been successful in raising $500,000 in the East, and that improvements of Duluth's streetcar situation was assured. However, there was a general feeling that DSR was not moving quickly enough. The HERALD of February 19 editorialized, "through...indecision, Duluth is losing every month far in excess of the actual cost of construction of an electric car line... It is impossible to predict how long Duluth will be tied to...its bob tail cars and dilapidated mules." Finally, the good news was forthcoming when the HERALD on February 21, in a report headed "BY CHAIN LIGHTNING!" announced the happy news, "Contingent upon the complete pavement of Superior St., the DSR will run its cars by electric power. If the council paves the street, the new railway will be built this spring."

With details of the type of electrification to be used and with the necessary capital arranged for, DSR was about to begin to arrange for the purchase of poles, rail, wire, electrical equipment, and cars. But before proceeding, it requested an exclusive franchise. The council, however, attached several conditions to an ordinance granting such rights to DSR. In defense of the company's position, DSR President W.W. Billson, in the March 22 Duluth HERALD, stated, "The franchise of the St. Paul Street Railway has always been ambiguous...so that the company has been more or less at the mercy of the city." Tense days followed as a stubborn Council and an adamant management refused to resolve the difficult situation.

Though the possibility of electric cars in Duluth now seemed stymied, yet electrification fever was spreading. Even if DSR was not ready or able to do so, there seemed to be others who were. The TRIBUNE of March 23 reported, "The wish of a great many citizens of Duluth that some new corporation apply for a franchise to construct an electric street railway bids fair to be gratified. The company, which is to be known as The Duluth Electric Street Railway Co., proposes to put in a standard gauge, double track, electric street railway on First Street in Duluth, extending from the westerly city limits to Ohio Ave. (18th Ave. E.) in Endion."

With the city elections over and a new Council seated, the deadlock was broken and action was finally forthcoming on March 31, "The ordinance authorizing the DSR to construct, equip and maintain certain lines of electric street railway within the limits of Duluth was passed at last night's meeting of the Council...one line

July 5, Construction of double-track and cross-overs moved vigorously that fall and winter, providing operations on 3rd Ave. W. and on 2nd St. by August 25 (1890), 6th Ave. E. by November 27, then single-track on E. 4th St. to 10th Ave. E. by December 2, to 14th Ave. E. by December 21, to 19½ Ave. E. by February (1891), and to 27th Ave. E. by September. This was double-tracked the following year. Construction was by Thompson-Houston Co. This, then, was the first electric line in Duluth to be built, not converted from narrow-gauge to standard-gauge.

** (22nd) Ave. E., single track
24th to 25th Ave. W. Crossover

cdrs.

*** Final day of horse car
operation in Duluth was Nov 7, 1890.

× The first/trial operation of an electric car was made on Sunday November 2 from DSR's new car house, built in July (see 7.3) at 20th Ave. E. Revenue operation

is to run from 28th Ave. W., east over (Superior and Michigan) Streets to Montana Ave. (22nd Ave. E.)...Another line is to run on 4th St. from 14th Ave. W. to 27th Ave. E." (from the TRIBUNE of April 1).

With 30 days to accept or reject the terms of the ordinance, DSR and Tom Lowry rejected it 3 days later. Although evidently agreeable to the general provisions of the ordinance— electrification, erection of poles and wires, change of gauge, paving, fares, etc.— DSR balked at the terms of the new franchise which, "... insisted upon concessions that a fulfillment thereof would have amounted to a practical revoking of the company's franchise...required two percent of gross earnings, and...allow the Council the privilege of regulating service."

This obviously would have placed DSR in an untenable situation. As an alternative, and immediately coincident with the refusal to accept the Council's terms for electrification, DSR announced its plans to promptly begin the improvement, instead, of the existing horse car operation: replace the mules with horses, larger cars, conversion to standard gauge and heavier rail.

The impasse dragged on through several days of protracted negotiations. Finally, on April 22, Council passed an amendment to the controversial resolution which, when signed by the mayor and accepted by DSR on April 28, permitted the company to proceed as originally planned. 1890

In collaboration with the Northwest Thompson-Houston Electric Co. (of Lynn, Mass.)* there began immediately the task of purchasing and installing trolley and power poles and wires. Reports, dated June 1890, stated that contracts for electric railway lines had been let to: (1) electricity: Thompson-Houston Co.; (2) 45-pound Johnston girder rail; (3) E. P. Allis & Co. for a steam-powered generating plant. Widening of the track to 4' 8 1/2" standard gauge, cedar block paving of Superior St. and 3rd Ave. W., purchase of larger, motorized cars, and the training of personnel for electric operation commenced immediately. Conversion reached 21st Ave. W. on June 30. (Common labor, working on the several street railway projects in Duluth and Superior, struck briefly on July 10 and won demands for a uniform $2.00 a day wage.) (See 4.52)

Revenue operation of the electric cars from 24th Ave. W. to 8th Ave. E. began officially at 6:35 p.m. Saturday, November 8, 1890. Then, on December 21, electric operation was extended to 22nd Ave. E. (See 4.13 and 4.52 for details of these events.)

Initially, and for reasons not recorded (did they run out of materials?), the double-track electrification extended only to 24th Ave. W. Horse cars shuttled the four blocks of narrow gauge single track to and from 28th Ave. W. The conversion was completed, however, to 28th Ave. six weeks later on December 21. All of the electrification was ~~quite probably~~ double track at this time: ~~28th~~ 24th Ave. W. to Montana (22nd) Ave. E. Cross-overs were installed instead of loops, wyes and turntables to turn the double-end cars.

2.5 EAST 4TH ST.

The prior success of electric street cars in Minneapolis, St. Paul, Superior and elsewhere had by now greatly influenced the thinking of DSR management. The ability of this new mode of transit had assured and reassured the industry of its great potential. Pursuant to the April 29, 1889 Council order for a line on 4th St., DSR began the construction of the EAST 4TH ST. line— the long-sought-for line on the hillside. As quickly as available, track construction crews were shifted from the WEST SUPERIOR ST. line, beginning on July 5. Double track had been laid on 3rd Ave. W. and on 2nd St. by August 25 (1890), and on 6th Ave. E. by November 27.

On December 2, cars began operation on E. 4th St. as far as 10th Ave. E. Construction continued and operation of cars to 14th Ave. E. began December 21. This then became the first electric line in Duluth to be built, not converted; the Superior Street electrification was a conversion from narrow to standard gauge.

*A logical choice, inasmuch as Thompson-Houston was in the process of installing generating and distribution equipment at this time for the Hartman Electric Co., a pioneer in providing electric power for the Twin Ports.

24th Ave. E. The Minnesota Supreme Court, on February 22, 1930, ruled that the demand, by the City, that DSR extend its E. 4th St. line tracks to Ridgewood Road ~~was~~ was unreasonable.

XXX October 20, 1888. A franchise of general operating terms was offered to DSR by the Village on July 14, 1891. This combined

Construction was by T-H Co., double track on 3rd Ave. W. (which included an 8.7% grade), 2nd St. and 6th Ave. E.; single track on E. 4th St. A February 1891 DSR ledger entry shows a $127,840 payment to NWT-H Co. for Superior St. and East 4th St. "electrification construction". Construction continued through the winter, the single track reaching 19th Ave. E. by February. This was the necessary link to the WOODLAND line which was being built simultaneously by Motor Line Improvement Co. (MLI) on Woodland Ave. from E. 4th St. to Austin St. (see 2.7). The line was extended, single track, to 27th Ave. E. in September (1891), and double track the following year.

The route chosen for the EAST 4TH ST. line was influenced considerably by residential developments in the then prestigious Ashbabula Heights area around 5th Ave. E. and 2nd St., and St. Mary's Hospital. In its first years of operation, this line was referred to as the "red car to the Court House", a reference to the red-colored destination signs/lanterns (see 5.49), and the new court house at 6th Ave. E. and 3rd St.

E. 4th St. originally was 86 feet wide, the additional 20 feet having been taken from the properties on the north side of the street from 6th to 14th Avenues East. When the EAST 4TH ST. line was built, DSR was compelled to lay its rails in conformity with this unusually-wide right-of-way. The parkway plans, or whatever, did not develop, so, when the street was repaved in 1914, DSR moved its tracks back to a normal alignment. Evidences of this are still visible today on the north side of E. 4th St.

Tracks for the EAST 4TH ST. line, built in 1890, and for the WEST 4TH ST. line, built in 1892, originally utilized 6th Ave. E. between 2nd and 4th Streets. Preliminary preparations for building the EAST 9TH ST. line began in 1909 when these tracks were relocated in 5th Ave. E. to replace those in 6th Ave. E., an initial step in obtaining an easier grade on the hillside above 4th St. The relocation went into service on June 22, 1909.

Council threatened court action June 12, 1928 to force a prior order for DSR to extend its double tracks on E. 4th St. to Ridgewood Road (32nd Ave. E.). The fight dragged through local courts and Council for over a year. In a March 22, 1929 decision, the State Supreme Court determined that the city's demands were "unreasonable". However, DSR compromised by installing a loop at 27th Ave. E. which became operational on November 9, 1929, thus providing for EAST 4TH ST. cars to once again run that far east instead of wyeing at 24th Ave. E.

Rail service ended July 8, 1939.

2.6 WEST DULUTH

The village of Oneota, along with others like West Duluth, Rice's Point and Lake Ave. S., had developed early as communities adjacent to Duluth, and sought an essential tie to the city. The pioneer townsite of Oneota was the largest of several early settlements. It became a part of West Duluth when the latter was incorporated on October 20, 1888. This combined area was in turn annexed by the City of Duluth on May 12, 1893.

The village of West Duluth had "franchised" a street railway to the West Duluth Street Railway Co. on October 19, 1889. Nothing came of that.

A rail line to Oneota and West Duluth was included in DSR's general plans, in September 1889, to improve and extend street car lines in the western area of the city. Capital stock was increased from $300,000 to $1,000,000. But even in the early stages of planning, these plans were stymied for an obvious reason as reported by the NEWS of January 17, "As regards the proposed extension to West Duluth, it was thought not advisable to commence it until a street was graded through for them."

On September 23, 1890, DSR and the West Duluth Village Council agreed that Oneota St. would be the best route to West Duluth. (Several months earlier, on April 24, 1890, the name of Oneota's main street was changed from First St. to Oneota St.) A westward extension of the WEST SUPERIOR ST. line, which had reached 21st Ave. W. on June 30, 1890, and 28th Ave. W. in December, apparently had priority over the Grand Ave. route.

Major difficulties to overcome in constructing this line were the necessity of strengthening a timber trestle on Sutphin St. over the St. Paul & Duluth Rwy. (Northern Pacific Rwy.) tracks, and the building of four trestles/bridges across ravines/creeks at 37th, 40th, 43rd and 46th Avenues W. on the Oneota St. portion of the line. These were filled later.

** on April 5, 1890, MLI was franchised "... and the City granted permission for DSR to build and operate an Elevated ~~Railway~~ Street Railway from 4th St. near 20th Ave. E. northward to the City limits." Council

xx $13.50." Apparently, MLI provided service on completed portions of the line as construction moved along in January through April 1891, renting DSR's cars "Duluth" and "Minneapolis": 18,688 miles at .026¢ per mile.

Test

~~On April 5, 1890, Council~~

For descriptions of wyes and loops at 32nd, 33rd, 34th and 37th Aves. W. see 2.23d and e.

On April 29, 1891, DSR general manager Chase announced that the line would be built to West Duluth as soon as the SP&D bridge was ready. Although the village of West Duluth was not annexed by the City of Duluth until January 1, 1894, that body had granted DSR a franchise on July 18, 1891 to build two street railway lines to West Duluth, with specific provisions to build one, by October 1 of that year, via Oneota St., and one, by July 1 of the following year (1892), via Grand Ave. Construction of the Oneota St. line apparently got under way in the summer of 1891. The HERALD of September 19, 1891 had this progress report, "On the West Duluth extension, rails are laid from the viaduct at the crossing of the St. Paul & Duluth Rwy. on Sutphin St. to near 'the car works' (at 49th Ave. W.). East of the 386-foot viaduct over the Duluth, Rainy Lake & Winnipeg Rwy. Co. (Duluth Winnipeg & Pacific Rwy.), the work remains to be done. It will be completed as soon as the viaduct is ready for the laying of the rails." By resolution, adopted November 9, 1891, Council agreed to a joint plan with DSR to proceed with plans for strengthening the viaduct.

Street names were otherwise in those early years: Ramsey St. was Fourth St. North; Raleigh St. was Second St. South; 62nd Ave. W. was 7th Ave. W.

DSR began hanging trolley wire on August 14, 1891, and completed the erection of trolley wire on Central Ave. on November 20. Nothing was said about track-laying progress. DSR stated that it "...hoped to begin running cars..." a week after the November 20 announcement. Service over the entire line did commence on November 27. However, a ledger sheet entry shows a first fare collection ($4.65) on October 2, so there seems to have been some revenue operation over portions of the line that had been completed. When finished, this was a double track line from 28th Ave. W., along Superior, Sutphin (Jenswold), Oneota, Ramsey, Central Ave., and on Raleigh St. to 57th; then single track along the north side of Raleigh St. to 62nd Ave. W. After operating (every 6 minutes) for two weeks, the line was already "killing" the Northern Pacific Rwy. Short Line business.

A wye was installed at 62nd Ave. W. in July 1899 to turn the then newly-rebuilt single-end cars. In October 1902 the double track was extended on Raleigh St. from Central Ave. to the end of the line.

In early 1902, the timber trestle (referred to above), with its light 35-pound rail, over the SP&D tracks on Sutphin St. had become in such poor condition that it was declared no longer safe for further use. In fact, proposed use of the then new heavier double-truck cars on the Oneota St. line was delayed because of this condition. In that year work began to replace the trestle with an underpass. During demolition of the trestle and construction of the underpass, Oneota St. cars were rerouted on a temporary detour track on 39th Ave. W. between Grand Ave. and Oneota St. July 9 (the only detour of this sort known to have been used in Duluth or Superior). Service was restored via Jenswold St. on April 11, 1903, and the 39th Ave. W. detour was removed.

In July 1929 serious consideration was given to abandoning the tracks west of 32nd Ave. W. when it became apparent that a large sum of money would need to be expended as DSR's share of improving and repaving Superior, Jenswold, Oneota, and Ramsey Streets west of 30th Ave. W. It developed, however, that the alternate plan of buying electric buses and constructing the necessary trolley overhead would be more costly. DSR, the City and the Northern Pacific Railway proceeded then with the street and track improvements, and which also included replacing the Northern Pacific underpass on Jenswold St.

The rails were abandoned west of 28th Ave. W. on March 13, 1939, but the rails from 21st to 28th Avenues W. were retained to give access to the car house and shops for the succeeding four months until the end of all rail operation.

2.7 HUNTERS PARK-WOODLAND

DSR had indicated its intentions in February 1890 to electrify the SUPERIOR ST. line and build an electric line on 4th St. (see 2.5 above). And although these early electrifications of street railway lines in Duluth had proven successful generally, DSR was not able financially to satisfy the ever-increasing demands to extend its tracks elsewhere (see 3.20).

Financial negotiations were progressing and construction plans were developing for the INCLINE-HIGHLAND AVE. project when DSR became involved in another real-estate-related project.

In their search for an improved quality of life, there were those not particularly enchanted with living among the fashionably elite of Duluth's East

End or living on or near Lake Superior's shores with its sometimes storms. For them, the quiet valley of Hunters Park, Glen Avon, Waverly Park and Park Heights offered an alternate charm not found elsewhere in Duluth. (Its residents' predominantly Scottish ancestry provided the "Oatmeal Hill" nickname for the community.) A mile further north an abundance of economically-priced lots were being offered in "Woodland Park". Motor Line Improvement Co. (MLI) had obtained more than 5,000 acres at that time. John Hunter, a real estate and insurance agent, along with Ronald Hunter, an architect/promoter, had planned and already begun to develop country-atmosphere estates in a time of urban expansion into this desirable suburban area. For the real estate developer seeking alternate, improved transportation to and from these developing communities, a rail line seemed a necessary ingredient in developing a profitable real estate investment. So it was that on February 20, 1890 MLI was incorporated with $600,000 capital stock "...to develop (real estate)...by constructing and operating...motor lines or other means of transportation as may tend to the development of...property." The promoters also included plans to serve the large, new cemeteries (Park Hill and Forest Hill established in 1882) which were developing at that time.

The Lyndale & Minnetonka Railroad, known locally as the "Motor Line", began operating steam-powered trains over Minneapolis streets to Lake Calhoun in 1879, extended to Lakes Harriet and Minnetonka in 1882. Perhaps this successful suburban operation gave Ronald Hunter his plans for a "motor line"* to Hunters Park.

Among MLI's nine directors were A.S. Chase, general manager of DSR, prominent Duluth realtors G.C. Hartley and Joseph Sellwood and Ronald Hunter. The original intent was to build a "motor line", to be converted to an electric line at a later date in conjunction with and contingent upon DSR's building of the E. 4th ST. line (see 2.5) and DSR's subsequent ability to furnish electric cars, power and personnel. DSR Manager Chase indicated, on the date of incorporation, that the HUNTERS PARK-WOODLAND line would be included in over-all plans to finance the eventual electrification in Duluth, public announcement of which had been made that day. Six days later Manager Chase announced that, instead of a steam motor line, the line would be built as an electric line, compatible with DSR's electrification at that time.

Less than two months later, on April 5, Council by resolution ordered the line built under DSR's franchise rights. Thereafter the building and operation of the E. 4TH ST. and HUNTERS PARK-WOODLAND lines were a joint effort of DSR and MLI, a dividing of responsibilities that developed into ~~somewhat~~ difficult situations later.

This, at that time, was an excellent plan, both financially and economically, for the community, developer, transit company and passengers: a means to lure prospective real estate buyers away from the center city by offering them improved transportation to and from their homes in some of the city's finest residential areas. Surveys began immediately to determine the route, and some preliminary work was done that fall of 1890, with labor and some materials furnished by DSR.

Newspaper display ads by the realty firm of Richardson Day & Co., and others had begun to appear July 25 promoting the sales of lots in Woodland Park and an additional note regarding the "...electric line now being built." Two months later, on September 28, in a comprehensive, full-page, illustrated newspaper feature, it was rather suprisingly--in retrospect--announced that the WOODLAND line was to utilize Indiana Ave. (19th Ave. E.) as a route between Superior and 4th Streets. This, of course, never happened. Spasmodic construction of the line continued through ~~fall~~, winter and spring (1890). Total cost of the line: $82,185. DSR furnished, "MLI, 1 man and team (of horses) 28 1/2 days at $3.50." Test car operations were run April 20 (1891), and an inspection trip was made over the line the following day. MLI's first two electric cars had arrived in Duluth from the builder the previous November 11 (see 5.7).

Scheduled service began April 28, 1891.

The single-track trolley line (referred to then as the "Glen Avon line") was built by MLI in collaboration with the Northwest Thompson-Houston Electric Co. from a connection with DSR's E. 4TH ST. line near 19th Ave. E., north on unimproved Woodland Ave. to Austin St., under agreements with and franchise rights of DSR. A carhouse was built at Austin St... why? ... not known. It and car 31 or 34 were destroyed in a 11-11-94 fire.

*Passenger cars utilizing power other than electric motors.

For reasons not completely known, operating problems developed immediately for DSR and MLI on that portion of the line on Woodland Ave. from 4th St. to Petre (St. Marie) St. (See 4.30 for an explanation of the situation). Surveys and preliminary work on relocation of the line began in July, and the City gave its approval on August 8 for street railway use of Wallace Ave. In September, DSR extended its E. 4TH ST. line east from 19th Ave. E. to Massachusetts Ave. (27th Ave. E.).

Immediately, MLI began grading Wallace Ave. from DSR's connecting track on 4th St. to Petre (St. Marie) St. and along Petre St. to a connection with the original line on Woodland Ave. thus:

Attempts to lay rail were halted, however, when W.E. Richardson of Richardson, Day & Co., realtors, refused to allow the laying of rails for the new line. Although he had given $20,000 financial assistance toward building the original line on Woodland Ave., and though he obtained a disputed injunction to halt the work, the City refused to intervene in the highly controversial matter. The rails were hastily laid on December 1, (1891) when he was out of the city for the day. Although very upset at these developments, and in spite of his threats of further legal action if one (franchise) car a day was not operated over the original route--to retain the original route until the matter could be resolved--cars thereafter operated on Wallace Ave. with its 4% grade, and the original line seems to have been abandoned soon after. It is quite possible that double track was laid on Wallace Ave. at this time; single track on Petre St.

On October 1, 1892 DSR and MLI entered into an agreement for the joint operation of the WOODLAND line "...extending the benefits of a street railway service to the inhabitants of Woodland Park." It is interesting to note that, although DSR had extended its E. 4th ST. line to 27th Ave. E. a year before this time, the agreement specifically provided that, in all matters of operation, maintenance, accounting and fare collection, MLI's WOODLAND line began at 14th Ave. E. although the cars operated over tracks of DSR from 14th to 27th Avenues E.

On October 1, 1900, DSR refused to continue operating cars over these tracks of MLI (built with very light 35lb. T rail), contending that, through neglect, they were no longer safe, caused undue wear on the cars and interruptions to service.) Evidently the earlier motive of expediency no longer existed for MLI. MLI offered DSR $500 for track improvements. This must have been perceived as a temporary solution. Furthermore, MLI wanted service to be provided only as far as the Petre Bridge, with shuttle service beyond. This, of course, was not, for DSR, a satisfactory solution or compromise. DSR offered MLI $5,000 for the line on April 6, 1901, which MLI would not accept, asking instead for $15,000. Again, on June 30, DSR refused to operate MLI cars beyond 27th Ave. E.

Total cost of the line, as built by MLI in 1891: $82,185.

The whole matter was resolved in an Agreement (bill of sale) dated and effective July 1, 1901 which specified that DSR shall:

1) Acquire the WOODLAND line in its entirety from 27th Ave. E. to Austin St. and convey to the DSR "All grants, rights-of-way, licenses and easements..." owned by the Woodland Co. together with the physical property composing the WOODLAND line. (At some unknown time before July 1901, MLI was acquired by the Woodland Company, a Wisconsin Corp.)

2) Within one year reconstruct and construct the line "so that it can be safely operated", with a single- or double-track option.

3) Have the right to extend the Wallace Ave. tracks north of St. Marie St. and eliminate the St. Marie St. (Petre's Bridge) portion of the line thus replaced.

4) Operate cars for the Woodland Co. on any extension of tracks up to 6200 feet beyond the Austin St. terminal upon payment of ten cents per car mile to DSR.

DSR immediately set about upgrading the entire line. A particularly troublesome spot was Petre's Bridge (over Tischers Creek on Woodland Ave.). In a relocation plan, DSR built a new bridge across the creek on Wallace Ave. in the spring of 1902, created a new grade, extended the double tracks along Wallace Ave.

to a juncture with the original line on Woodland Ave. near Hardy St., thence double-track on Woodland Ave. to Stornaway St., and abandoned those portions replaced on Petre St. and on Woodland Ave. Council had established this portion of Wallace Ave. as early as August 1893.

The proposal of the Woodland Co. to extend its tracks beyond Austin St. never did, of course, materialize.

East Superior St. seemed to be a more desirable route for WOODLAND cars than 4th St. On July 20, 1904 the Council ordered a line built on 23rd Ave. E. connecting the tracks on Superior and 4th Streets. But for nearly three years there was serious disagreement among several factions over the proposed laying of tracks on this avenue. Although it was the best grade and route, property owners on and adjacent to 23rd Ave. E. were so determined that the line should not be built on that avenue that they offered financial assistance to DSR to build elsewhere. DSR began the difficult task of blasting a considerable rock cut on 24th Ave. E. between Superior and 1st Streets in August 1904. Agitation by property owners continued to delay the project. Leaving the partisans to their wranglings, DSR resumed the project in March 1907, completing a double-track line on that avenue on August 18, 1907 between Superior and 4th Streets. WOODLAND cars thereafter used this route.

At various times prior to 1915, and under both management's, that portion of line from Stornaway St. to the end of the line at Austin St. was operated as a shuttle line, that portion being single track. When the large, double-truck cars were put in service on the WOODLAND line in March 1905, a wye was built at St. Paul Ave. to turn them (instead of running them through to the end of the line). This arrangement met with immediate opposition, and in August the large cars began operating through to the end of the line, where it was necessary to install a loop. The line then appeared thus:

The double track was extended from Stornaway St. 2100 feet up Hartley Hill (also variously referred to as "Woodland Hill", "Dairy Hill" and "Woodland Dairy") in October 1915, another 716 feet to the top of the Hill in July 1922, and finally to Austin St. on August 15, 1928. For several years after the 1928 double-track extension, the Austin St. loop included a spur inside the loop (from a portion of the former single-track loop).

ok

In February 1923 DSR was ordered to extend the line west along Calvary Road to Homecroft. Inasmuch as most of this extension would have been outside the city limits, DSR, under the terms of its franchise, was not compelled to do so.

In 1903 a single track on Woodland Ave. between Hardy and St. Marie Streets was reinstalled temporarily as a spur track to the "Macfarlane" gravel pit (see 3.19).

The rail line was abandoned July 8, 1939.

2.8 7TH AVE. W. INCLINE-HIGHLAND AVE.

In all its affiliations with real estate developers and transit planners, none were as difficult, complex and, perhaps, traumatic for DSR as its involvement in the HIGHLAND AVE. line and the 7TH AVE. W. INCLINE. Each could not have come about without the other; likewise, neither could have survived without the other. It was imperative from the beginning, therefore, that this would be a joint venture: planning, timing, financing, building and operating. Difficulties became apparent early, and were never completely resolved. They were complex; this dissertation is lengthy as a result.

Even before it had resolved its franchise difficulties, and while it was still searching for solutions to its problems of electrification, DSR was becoming the major party to a real estate speculation.

On September 18, 1889 the Highland Improvement Co. (HIC) was incorporated as successor to the Duluth Heights Land Co. for the purpose of developing and promoting the sale of real estate (1047 acres) in Section 28 of the Duluth Heights 1st Division, more specifically along Highland Ave. From the beginning it was

1890

PA. The City, on February 26, 189.. granted BSR a franchise "... to construct and operate an Elevated Incline Railway over 7th Ave. W."

realized that public transportation was the primary importance in the development of the plan...much more so than would be necessary at Hunters Park and Woodland. In this particular situation an incline railway obviously was the only applicable mode. Besides involving DSR in this proposed plan, Thomas Lowry had a personal interest in it as well. In an earlier letter, written April 16, 1889 to Charles E. Shannon, general manager of HIC, he stressed the importance of this aspect; "In the first place, in order to bring the property into market, the Inclined Plane Railway is the key to the situation. The operation of a line on the hill beyond the terminus of the Incline would, of course, depend upon the extent to which the property was improved and the number of inhabitants locating thereon."

The plans were originally conceived when Tom Lowry, J. J. and Sam Hill, Tom Wilson and two Boston capitalists, J. H. and R. H. Harris, made a trip to Duluth on May 17, 1889 to visit the site and discuss plans for financing and developing the venture. Negotiations culminated in an agreement on July 25, 1889, whereby HIC (to be incorporated for one million dollars) would expend "at least $50,000" in beautification and street improvements in "Highland Park", to grade the streets and make them ready for a street car line and "...to acquire for the said street railway company without cost to the same, and free from all claims for damage by the owners of the property along the line of said railway system, the right-of-way for the same." HIC was also to acquire property for terminals, powerhouse, waiting stations, etc., and to be reimbursed by the railway company at the actual cost of the ground for the latter purposes. In addition, HIC was to secure the necessary right-of-way on 7th Ave. W., free from claims of property owners, and $200,000 to Samuel Hill and A. S. Chase jointly and $15,000 to DSR, the entire $215,000 to be held in escrow until completion of the lines provided for. The agreement specified further that DSR in turn was to buy not less than 1,000 acres of land at the top of the hill (as its investment in the real estate promotion), and to "...construct, operate, and maintain an elevated, inclined street railway..." On July 31 (1889) DSR addressed a proposition to J. A. Willard, Clinton Markell and Charles Shannon (of HIC), which was accepted by them as a "committee" on the same date, for building an incline railway on 7th Ave. W., and a street railway line 160 rods (2640 feet) long, connecting with the incline at the top of the hill, "...in such direction as shall be by said (DSR and HIC) determined...", this street railway to be in operation not later than May 1, 1891. An agreement was signed January 16, 1890. An ordinance was adopted by Council on February 24, "Granting to the Duluth Street Railway Company the right to construct, maintain and operate an elevated, inclined street railway in the City of Duluth." The plat was filed on March 25, and the surveyor's certificate on April 21.

a. 7TH AVE. W. INCLINE

Plans and specifications for the incline cars and structures were by Hungarian-born Samuel Diescher of Pittsburgh, PA. who had designed several similar inclines for Pittsburgh and Johnstown, PA. The HERALD of April 15 1890 stated, "Work will be commenced on the Incline soon, but it is a larger undertaking than most people imagine. Very little of the work can be done by home labor, as it is almost entirely the work of skilled bridge makers. The survey has already been completed and the plans for the (Incline) are well under way." Work was to begin May 1, 1890, and the INCLINE to begin operation "...not later than one year..." A profile of the INCLINE, along with a description of the cars, was made public July 6 (1890). On September 23, DSR advertised for bids to blast rock on 7th Ave. W.

Inasmuch as HIC had not yet, on March 4, 1891, fully acquired the necessary right-of-way easement on 7th Ave. W., the time for completion of the INCLINE was extended to August 1. The delay was caused by prolonged litigation as DSR and property owners on 7th Ave. W. became involved in numerous right-of-way appeals through the courts. (Inasmuch as construction of the incline railway would, by its very nature, preclude henceforth any other public use of the avenue - it being denied ordinary purposes except for sidewalks and stairways - it was necessary for DSR to obtain an exclusive 38-foot wide right-of-way easement dedicated to and for the sole purpose of building the incline structure on 7th Ave. W. from Superior to 8th Streets. HIC, therefore, contributed $50,000 to DSR for this right, the funds being awarded to abutting property owners for damages thus incurred. From March 20, 1889 to April 8, 1892, DSR paid a total of $31,754 on 44 deeds, ranging from $1.00 to $5,180 each, 17 of which were resolved in District Court and through

In April 18, 1889, memo, Vice President Charles Shannon, in a memo to President Thom. Lowry wrote, "To bring the property into market, the INCLINE PLANE RAILWAY is the key to the situation.

** B spot. A balloon ascension in August 1893 added excitement and interest ~~to~~ at the site.

***

project, ~~The City~~ A City Ordinance, dated February 24, 1890, granted DSR the right "to construct, maintain and operate..." a street railway. As

other legal actions.) Three extensions of time were granted by Council after its original order to have the line in operation by June 1 had passed.

Steel arrived from Keystone Bridge Co.'s Pittsburgh plant (predecessor of American Bridge Co.) on June 22 (1891). John A. Roeblings Sons Co. provided 6.6 miles of steel cable and 11 miles of copper wire. Construction of piers had already begun as McCain Bros. moved ahead rapidly with preliminary construction of the .563-mile-long railway that rose 530 feet from Superior St., with ~~a maximum grade of 24.7 percent between Superior and 1st Streets~~. The power house at the top of the INCLINE was completed July 1, and the steam-powered hoisting machinery was hauled to the power house on July 17 for installation. Construction of the INCLINE structure was completed on October 6. The hoisting machinery was tested on November 4, and trial operation of both cars began November 29 without fanfare.

Scheduled operations began December 2. DSR had very early come to the sad realization that it would be quite difficult to eke satisfactory revenue from this austere operation in a reluctant area. A large pavilion was built and opened July 4, 1892 adjacent to the power house at the top of the INCLINE (referred to as "Hill Top"), with the hope that the dining rooms, concerts, dramas, dances and other events would produce additional revenue at the pavilion and from the INCLINE which was the more or less convenient and direct means of access to and from the "Beacon Hill" fun spot.

In retrospect it is difficult to understand why this particular area of the city had been chosen for development...an area of bleak, bare rocks, grand in its rugged beauty but difficult in the extreme as a site for homes. Even today, a hundred years later, it remains relatively isolated and undeveloped in spite of its excellent view of the lake and harbor. It is equally difficult to understand why the developers had not chosen, instead, the Lake Ave. area for an incline route, a choice which time would prove to be better in terms of subsequent development. The project would have died in birth had it been attempted in any years other than 1890-91: technical know-how had not developed sufficiently before that date; failure of similar projects and, finally, the panic of 1893, after that date.

A disastrous and spectacular fire on May 28, 1901 destroyed the power house, pavilion and one of the two INCLINE cars. In the aftermath, several major changes were made to the INCLINE. The steam-powered hoisting machinery was removed. Intermediate stations were erected at or near 3rd, and 4th Streets, and trolley poles and wires were erected. A self-propelled electric car for the west track and a dummy counter-balance car for the east track (see 5.35) arrived from TCL shops on November 27, 1901. Operation began January 1. Intermediate stations were added at 5th and 7th Streets the following year. The pavilion was not rebuilt.

The single car became inadequate to handle the increasing traffic and, by 1910, was carrying passenger loads in excess of its rated and safety factors. The single-car operation was terminated May 14, 1911. Several major changes were again made in equipment and operation, with rebuilding having begun March 18. Locations of the four intermediate stations were altered and a fifth station was added at 2nd St. Electric hoisting equipment and two large cars, designed, built and installed by TCRT (see 5.34), began operating June 10. Several unique safety devices and procedures were incorporated into the reequipping of the INCLINE. The two cars, numbered 220 and 221 (although those numbers never appeared on the cars!) were connected by phone to an 'engineer' who controlled movements of the cars from a 'cab' at the top of the INCLINE, referred to at that time as 'Hill Top'.

The basic incline structure and tracks remained unchanged in 48 years of operation. (For a description of the INCLINE structure, see 7.6; for additional description of the cars, see 5.35; and for its operation through the several changes, see 4.35.)

b. HIGHLAND AVE.

Although building of a street car line on Highland Ave. to connect with the INCLINE was part of the July 31, 1889 Agreement, and although HIC vigorously promoted the sale of lots— they claimed that 1800 improved lots were available for sale in summer 1891— there was, however, no simultaneous construction of a connecting street car line at the top of the INCLINE, or any public announcements or details concerning this phase of the ambitious project. As an inducement to

see." As a promotional gimmick, DSR placed a large, 34' double-truck open car #95 in service on the line on September 27, 1892 (see 5.8).

line. Operations began October 3. Records are vague; but there some hints that operation of 2 single-truck cars began at this time of austere operations after the corporate changes. DSR bought 7 double-end, single-truck cars, 19 to 30 from Laclede Car Co. in September 1890. One of these, 29, was sent to TCRT for "modification", and returned for operation on the Highland Ave. lines.

A brief note in DSR records indicates "Car 43 burned" on the Highland Ave. line on January 29, 1911. Nothing more is known.

** 1903. The Highland Ave. line operation seems to have gone well in those early years, so much so that two double-truck cars, 255 and 256, went into operation on January 18, 1913, replacing the two single-truckers (see 5.22).

release the account in escrow, DSR entered into a new agreement (resolution of HIC dated November 12, 1891) to construct the connecting street car line, and failing to commence such construction by June 1, 1892, the line might be constructed by HIC, DSR to reimburse HIC for the cost of constructing the line which should then become the property of DSR.

It appears that construction of the HIGHLAND AVE. line--also commonly referred to as 'The Heights' line--did not commence until the following summer (of 1892). Finally, in a half-page TRIBUNE newspaper ad on September 28, HIC invited Duluthians to visit Highland Park and ride the 'electric street railway' which had begun operation at noon of the previous day, ~~utilizing DSR car 29 (see 5.2, 5.8 and 4.35 for HIGHLAND AVE. car assignments)~~. "Lots can be bought for $150-$300...come ride on the street car and see."

DSR records indicate that when operation of the HIGLAND AVE. line began, the tracks extended only to Cedar St. (Arlington Ave.). At some time in the following year, the line was extended around the curve on Palmetto St. to Highland Ave. (now Basswood St.), and, finally, to its ultimate terminal at Locust St., just prior to its acquisition by DSR in 1894. Old city maps show the original tracks extending an additional 1800 feet to Maple Grove Road; no record can be found, official or otherwise, to substantiate this.

An October 1, 1892 agreement stated that HIC had constructed, partially equipped and owned a single-track street railway line 3400 feet in length, "...connecting with the line of the (DSR) at or near the intersection of Highland Ave. and Winter St., and extending thence to the intersection of Highland Ave. and Linden St." This would indicate that HIC had built approximately one-third of the line. How this came about seems not to be known. On that same date, DSR became operator of the entire line.

The HIGHLAND AVE. line was single track, 1.9 miles long. A passing siding between 13th and Bench Streets was installed in about 1913, and remained in service until the line was abandoned. A 362-foot passing siding was built in 1907 at about 255 feet south of Arlington Ave.; removed in 1924. A single-track 15 x 50-foot car house was located on a 195-foot spur track at the south end of the line near the INCLINE control cab (see 7.12). 7.66

In a subsequent agreement, April 21, 1893, HIC, through a stock transfer and other considerations, deeded to DSR that portion of the line constructed by HIC. HIC stated then that the total cost to them of the HIGHLAND AVE. line, including equipment and right-of-way was $42,870, toward which DSR contributed $11,200, less a deficit of $15,932 in operating the line from January 1, 1894 to December 31, 1897.

c. CORPORATE CHANGES AND ABANDONMENT

Unfortunately, visions of empire faded swiftly for HIC; the developer's venture seemed doomed to failure. A less than dramatic sale of real estate (lots along the street car line sold for $150, others for $100), and the severe economic decline brought about by the 1893 Panic was the death knell. No matter; on June 12, 1894, after operating the line for nearly two years at no cost to HIC, DSR acquired all remaining interest in the line from HIC for $6,260...alas, the less fortunate side of real estate investment risks. The deed included "...the right-of-way privilege for operating said railway upon said constructed railway line through and upon said property of the (HIC)..." and other assets:

1 street car	$1,862
1 frame car house	75
Rails, ties, poles (trolley wire?)	694
Accounts receivable	3,629
Total	$6,260

The Bill of Sale was consummated on January 25, 1895. It is quite possible that this was a summer-only operation until DSR's acquisition in 1895. The entire line was rebuilt and upgraded in 1903.

The last trip of the INCLINE was at 5:35 p.m. September 4 (Labor Day) 1939, at which time the HIGHLAND AVE. line was also abandoned (see 4.24). These were the final street railway operations in Duluth-Superior.

2.9 single-end cars... a "super" 80# rail with welded joints! In

7.76

2.9 EAST END-ARMORY

The original electrification (December 1890) extended double track on Superior St. to 22nd Ave. E. Why 22nd Ave. E. was chosen as the terminal at that time is not known. Simultaneously, a car house was built on the southeast corner of ~~22nd~~ 20th Ave. E. (see ~~7.06~~). Less than two years later, the LAKESIDE line (see 2.10) was built to Lakeside and Lester Park as an extension of the EAST END line.

In January 1901, a wye was installed at 3rd Ave. E. to turn the then new double-truck single-end cars. In summer 1902, a wye was built at 23rd Ave. E. to turn EAST END cars. This was moved to 24th Ave. E. in late 1904 during the 23rd-24th Avenues E. hassle (see 2.7).

To provide better service for large-crowd events at the Amphitheater, Armory and Curling Club, and to minimize interruptions to regular service at these times, a loop and storage track were proposed by DSR and authorized by Council on January 3, 1927. The loop was constructed in May on Jefferson St., 13th and 14th Avenues E., and became operational June 2, 1927. Though this was referred to by DSR as the "Jefferson Loop", it was more popularly known as the Armory Loop, and the cars carried ARMORY destination signs.

The rails between 3rd and 16th Avenues E., re-laid in 1903, deteriorated into poor condition in later years, necessitating some speed restrictions on this stretch of track. Rather than undertaking the great cost of relaying its tracks during a major street repaving project, DSR chose to abandon the rail line on July 27, 1934 between 3rd and 24th Avenues E., including the ARMORY loop tracks. WOODLAND and CROSLEY cars thereafter reverted to the 2nd-4th Streets route. The 24th Ave. E., and Superior Street tracks were altered to provide rail connection for the then isolated CROSLEY line, and to provide, for a while, a rush-hour through route, thus:

After the EAST END line abandonment in 1934, and until September 14, 1936 (when construction of the 2nd Ave. East loop line began), the 3rd Ave. E. wye remained thus:

OK

2.10 LESTER PARK (LAKESIDE)

Referred to as New London in those early years when DSR received its franchise to serve Duluth's suburbs, the community, incorporated on May 4, 1889, changed its name to Lakeside, and was annexed to Duluth January 3, 1893, two weeks after the new street car line tied the two communities together.

We should pause here a moment and look at a time line. Most of DSR's recent rail line extensions were, primarily, tools for promoting real estate in Duluth's developing north and northeast suburbs: Glen Avon, Hunters Park, Woodland in April 1891; the Wallace Ave. relocation and the 7th Ave. West Incline in December 1891; and Highland-Duluth Heights in September 1892.

Now comes a horse of a different color. Although other developers had recognized the great importance and value of providing public transportation in their plans, the Lakeside Railway was to be built in an area that was already served with an excellent, adequate suburban rail transportation service, the 'short line' steam railroad passenger service furnished by the Duluth & Iron Range Railroad, which was then running 17 daily round trips to Lester Park from 6:30 a.m. to 11:20 p.m.* In time, the DSR line turned out to be an excellent revenue producer, and the D&IR was forced by severely declining revenues to terminate its service which had begun in 1887.

The Lakeside Railway Co. (LR) (also referred to as the Lakeside Railroad Co.) was incorporated on June 12, 1892, and jointly with the Lakeside Land Co. (LL), (also referred to as the Lakeside Land Development Co.), for the express purpose of building a street railway to the then separate communities of London Addition, Lakeside and Lester Park as an extension of DSR's EAST END line, which at that time terminated at 22nd Ave. E.

* The D&IR used their passenger locomotive #99, a light-weight 4-4-0, and a wooden coach for their Union Station, Endion, Lakeside (Lakeview) Lester Park service.

As early as July 10, 1891, DSR apparently became involved in plans to build a street railway to Lakeside, for on that date DSR recommended to the City a temporary halt in street preparations, warning that the street grades already established by the City were not proper for satisfactory operation of street cars. DSR had already gone through that agony on the original routing of the WOODLAND AVE. line a year earlier. Evidently the advice had not fallen on deaf ears. Unlike most orders by Council, which had ordered and would continue to order DSR on numerous occasions to build street car lines on streets that were not adequately prepared for them, Superior St. (named Bench St. until August 1891) was then properly prepared east of 22nd Ave. E. "...the grade of said street was considerably lowered, and extra heavy bridges were constructed to safely carry the heavy cars (of DSR), all being done at great additional expense...(and) will be completed by July 1, 1892".)

Construction of that portion of the line within Duluth was ordered by Duluth Council on April 25, 1892, and the Lakeside portion by that Council on July 11 over the signature of Lakeside Mayor E.C. Little, and which guaranteed the first mortgage 10 year bonds ($75,000) of LR.

At a called special meeting June 23, 1892, the five newly-elected officers of LR met to "...take such measures as may be necessary to secure the proper preparations by the cities of Duluth and Lakeside of a route for the street railroad tracks of this company over the streets of said cities...from a junction with...the tracks of (DSR)...to Lester River." A franchise was granted by the City of Lakeside on July 20.

LR seems to have moved along promptly in planning the line in summer 1892. Half-page newspaper display ads began appearing July 31 promoting land sales by LL, with the promise of electric street car service "...before winter of this year." On August 14 the TRIBUNE noted, "The ties are being distributed and the rails will be here by September 1."

On September 1, DSR entered into an agreement with LR for the building, operation and maintenance of the line, wherein it being agreed that, "...Lakeside Railway proposes to construct and equip a double-track...line from (22nd Ave. E.) to Park Ave. in the city of Lakeside...), the LR "...will at once construct a first-class...line...and will construct and build said railway according to plans and specifications furnished by DSR and under the supervision and to the satisfaction of DSR." DSR contracted with W. C. Doherty Co. to build the line, using 3 1/2" 45lb. rails. Construction had progressed one mile by October 7.

Although the agreement in most respects contained wording similar to previous agreements with promoters of the Motor Line Improvement project in Hunters Park and Woodland, and the Highland Improvement project on Duluth Heights, it did, in this particular agreement only, provide for DSR control over the building of the line. After its unfortunate experiences with tracks of questionable quality already built and in operation by MLI and HIC jointly with DSR, this additional clause was, no doubt, DSR's assured control over a repetition of such deficiencies.

In all the legal and operating matters, however, there were no references to or plans providing cars for the start-up operation. But a DSR invoice, dated January 15, 1892, shows the sale of six cars - 30, 39, 40, 44, 45, 46 - to LR for $16,800. (See 5.3)

The line began revenue operations on December 17 (1892), following an 11:00 a.m. inspection trip by City, company officials and the press. Beginning operation of the line was five months prior to the deadline fixed by Council, a somewhat unusual accomplishment in that era of sometimes unrealistic, over-optimistic scheduling. (See 5.5 for LR's rail operation.)

This was a double-track* line from its connection with DSR tracks at 22nd Ave. E. to 45th (or 47th) Ave. E., then single track to the end of the line, with a passing track at 54th Ave. E.** LR's cost of building the line: $53,500.

* Some accounts show single track, only (4 miles).
** Superior St., in those early days, was known as Cambridge St. from 40th to 44th Avenues E., and Grand Ave. from there to Lester Park.

Like MLI and its WOODLAND line, LR allowed its tracks to fall into disrepair. On April 24, 1897, for instance, Herbert Warren, general manager of DSR, wrote to Chas. R. Haines, president of LR, "The track in the condition that it is in at present, is, as you probably know, ruinous to cars, to say nothing of the discomfort to passengers and the liability to accident." On June 22, 1899, the line was offered to whomever would assume bonds. Inasmuch as DSR itself was in receivership at the time, it was in no position to consider the acquisition. Soon thereafter, however, the property was included in the general merger and reorganization of all street railway properties in Duluth-Superior. A bill of sale was accomplished September 1, 1900; the deed was transferred October 15, conveying all property and rights to DSR: track from 22nd to 60th Aves. E. and 7 cars. 151-162

With the arrival of the first large single-end cars in Duluth on ~~the spring of~~ Jan 3, 1901, the company found it necessary to install several loops and wyes to turn these cars. At the September 30, 1900 Board meeting, DSR authorized the purchase of land for an off-street loop at Lester Park, this being the first of these (October 31, 1901) to be installed. In an October 1 contract with DSR, LL furnished the necessary land (two lots) for this off-street loop, DSR's first known operations on off-street property in Duluth. A trial run was made on May 23. 61st Ave. E.,

The single-track portion of the line from 45th to 61st Avenues E. was converted to double track in 1909. It was probably at this time that an 80-foot, two car, siding was added to the inbound track west of the Lester River bridge to help handle picnic and amusement park crowds; this was removed in 1920. A wye was installed at 45th Ave. E. on June 27, 1917. Designation of the line was changed from 'LAKESIDE' to 'LESTER PARK' in 1916; transfers and destination signs on the cars were changed accordingly.

The 45th to 61st Avenues portion of the rail line was abandoned August 26, 1931 when the street was repaved and preparations made for Duluth's first trolley bus operation which began October 4 over the same route. (See 5.58).

The tracks at 45th Ave. E. and Superior St. went through a metamorphosis of a sort through the years:

OK

2.11 LAKE AVE., (~~AERIAL BRIDGE~~) CANAL

Construction of the INCLINE, the WEST DULUTH line and extensions of the EAST 4TH ST. line had placed great financial, equipment, management and operating burdens on DSR, resulting in a brief period of receivership in August of 1891. The City, however, was continuing to enjoy rapid growth and was riding the crest of prosperity. This favorable economic climate was the catalyst that brought about the simultaneous building of the LAKE AVE. and GARFIELD AVE. lines in 1891-92.

The Lake Ave. south peninsula was a very early growth area (Duluth's first house was built at Morse Street in 1856). Across the Canal, on Park Point nearby, horse cars had been operating since 1888. No specific reason can be found for a street car line not to have been built sooner in this growth area, except, perhaps, the difficulty of establishing a suitable grade over Michigan St. and the Northern Pacific Railway tracks. After some unfortunate, lengthy delays, the City established the grade and entered into a contract with the NP on April 19, 1891 for the construction of the Lake Ave. viaduct. When construction had not yet begun in September, the City notified the railroad that there should be no further delay.

~~2.12 GARFIELD AVE.~~

Until 1871, ships entered St.Louis Bay from Lake Superior through a natural channel that cut across Minnesota Point close to the Wisconsin shore.

Closely allied with the history of Lake Ave. South. is the history of its close neighbor; the Duluth Ship Canal.

The site for the Canal was determined on October 24, 1864. On August 9, 1870, the city authorized a $ 50,000 bond issue for the digging of the Canal across Lake Ave. South, two blocks south of St. Marie St. at what was known at that time as Portage St.

A contract to dig the Canal was given to the firm of Dodge & Moses in summer 1870. Their drudge, the Ishpeming, cut 2/3 of the way across the point when winter weather closed down their operation.

On October 15 the State of Wisconsin – fearing shipping competition – enjoined the contractor from proceeding. There is no report of further litigation.

Dredging operations resumed in spring 1871; dredging of the 300' wide Canal was completed on May 6, 1871.

From then until operation of the Aerial Bridge began in 1905, there were many and devious methods of crossing the Canal: steam ferries, row boats, foot bridges and, in winter, the unpredictable crossing on frozen surfaces. In 1897 the City began steam ferry operations between the West Morris St. dock and 8th St. on the Point.

In 1887, title to the Canal was given to the Federal Government Engineers (War Department), which then- and now-has jurisdiction over navigable waterways. A temporary, confusing permit for construction was initially delayed, but finally granted on September 6, 1901, at which time the City was reimbursed for costs of the digging.

On April 24, 1889, the Minnesota Legislature authorized construction, operation and maintenance of a bridge. This was sanctioned by the Legislature in 1901.

Before and during the digging of the Canal, there was much concern – and discussion – about the type of bridge to be built across the Canal, connecting Lake Ave. So. with Park Point, more commonly know in those early days as Midellton.

Many were the plans for the design of a bridge across the Canal. In 1889, City Engineer Thomas F. McGilrary proposed a plan that utilized the design of an aerial-type bridge patterned after the Anodin Bridge in Rouen, France—the only one of its kind in the world.

On May 14, 1900, the City Council appointed a Bridge Commission. Then, in February 1901, C.A.P. Turner of the Gillette – Herzog Mfg. Co. of Minneapolis designed the "Ferry Bridge". However, only the piers were built at this time.

See 7.4 for the design, construction and operation of the bridge.

It is not evident what the City Council had in mind when, on December 21, it ordered a double-track street car line built on Lake Ave. from the Canal to 12th St. (top of the hill) by October 1, 1892. Even if there was a lingering demand for another hillside line (see 2.3), this must have lost some of its urgency when the 7TH AVE. W. INCLINE began operating a few weeks prior to this time (see 2.8), and the EAST 4TH ST. line had been in operation for a year (see 2.5). No account can be found of DSR's noncompliance with that part of the order to build north of Superior St. only. Perhaps the difficulties that came with the early operation of the 7TH AVE. W. INCLINE had a deterring affect on DSR's response to this order.

Construction of the viaduct had progressed sufficiently that Spring of 1892 so that DSR began laying tracks on June 3, and on July 30 DSR was erecting its poles and wires. Although the viaduct was not opened for use by the general public until December 10, it was quite possible that DSR's through-routing of GARFIELD AVE.--LAKE AVE.--which quickly became DSR's busiest line--commenced simultaneously when the GARFIELD AVE. line became operational on September 25 (1892). The TRIBUNE of October 3 gave the rather contradictory report that erection of trolley poles and wires, and the building of the stone abutments of the viaduct, were not completed until that date. A DSR ledger book entry, however, indicates that the first fares were collected on October 1...perhaps utilizing a portion of the line already completed. see 2.21 and 7.4

More commonly referred to later as the AERIAL BRIDGE line (the Aerial Bridge was built in 1904-05), the double-track portion of the line, as built in 1892, extended from Superior to Buchanan Streets, then single track to the Canal. No record can be found of when or why the double track was cut back to Sutphin St., but probably in 1903 when the entire line was rebuilt. A wye was added at Morse St. in July 1899 when several cars were rebuilt by DSR for single-end operation and put in service on this line. A wye at Superior St., not originally provided, was probably added at this time. Traffic congestion at the bridge approach, aggravated by the wyeing of cars at Morse St., required the building of a loop, utilizing a portion of Morse St., South 1st Ave. E. (St. Croix Ave.) and a private right-of-way adjacent to the U.S. Engineers Office. This loop became operational on August 7, 1928. The Morse St. leg of the wye was removed in July 1929. The tracks were again altered in winter 1929-30 to provide double tracks on both approaches to the new Aerial Lift Bridge across the ship canal (see 2.21).

These were, in turn, abandoned simultaneously with the abandonment of the PARK POINT line in June 1931; the line then reverted to its pre-1930 loop arrangement.

In down-grading the line in July 1931, a month after the PARK POINT line was abandoned, unique use was made of the two center rails of the former double track from Michigan to Sutphin Streets to obtain a single track.

The original line and subsequent changes:

After several years of rush-hour-only use, the rail line was abandoned in March 1938.

2.12 ~~DULUTH-SUPERIOR (INTERSTATE)~~ GARFIELD AVE.

a. An "express condition" of the original charter, granted to DSR by the Legislative Acts Special Laws of 1881, was that DSR, "...shall build and operate a line connecting Rice's Point with the central parts of said Village (of Duluth)." Like the Lake Avenue south area of the city, this area, too, had developed early and had become a business area and the center of much commercial activity: saw mills, railroad facilities, grain handling, coal docks, and other marine operations.

on steam railroads: NP

pp #19

points. For its ferry boat
operations at the foot of Garfield
Ave., DSR provided a 20' x 40'
waiting room, and a 25' x 60'
loading dock. It

Several large sawmills and related lumber operations developed in Duluth and Superior during the '80s and '90s, particularly on Rice's Point--and on Connor's Point in Superior--as a result of extensive logging operations in the forests of northern Minnesota and Wisconsin, reaching a peak of 440 million board feet of milled lumber in Duluth in 1902, becoming the city's largest employer at that time, and generating considerable passenger traffic for DSR.

Travel between the two cities was difficult in those early years. Before ferry boat operation began in May 1893, it is quite possible that interstate passengers were offered passage on NP, GN, SOO and C&NW trains that operated over their bridges between the two cities.

And of great importance was the fact that this--Connors Point--was the closest land area to Superior's Rices Point and, hopefully and foreseeably, DSR's cars would some day use an extension of this line as an interstate route across St. Louis Bay, referred to in those early days as 'The Gate'. Although the outlook was exceedingly favorable for this line, an explanation for the delay in building it can probably be found in the original DSR charter which went on to state, "...(DSR) shall build and operate (this) line...as soon as there shall be an improved street available for that purpose." The line had been ordered November 10, 1890; construction of the line did not commence, however, until summer 1892.

Service on the line began September 25, with cars running to the tip of the Point, where in May of the following year (1893), DSR built a platform, a boat dock and a waiting station/shelter for the convenience and comfort of its ferry boat passengers.

The crossing of no less than 16 railroad tracks at grade on Garfield Ave. constituted a great hazard and caused delays to the operation of street cars on this line, as originally built. Considerable relief from this difficult situation was to be gained by Northern Pacific Railway's announced plans to build a Garfield Ave. viaduct over many of its tracks, and overall changes and additions to its Rice's Point facilities and those of other railroads serving the area.

In preparation for this, several changes were necessary in the arrangement of DSR tracks in this vicinity. Planning and preliminary work by DSR began in the fall of 1900. Rail lines, of this time, and the years in which they were built, are as shown:

By spring 1901, rails had been laid in Superior St. between Garfield and 18th Avenues W. It seems probable that this stretch of track was put into use at this time. The parallel, replaced tracks on Michigan St. were removed in April (1902).

The only year-round rail connections between the two cities originally were by the railroads. There were no public bridges across the river or the bay.

Construction of the viaduct by the Northern Pacific probably began in the spring of 1901. DSR began to operate its cars over the viaduct in May of the following year, thereby eliminating its tracks on Michigan St. between Garfield and 13th Avenues W.

The net result of all these changes on Garfield Ave. was the reducing of the number of railroad grade crossings to five, all of which were now limited-use dock-access tracks, and by August 1903, DSR had a fine double-track line on Garfield Ave., a considerable improvement over the former partly-single-track line. The NP tracks that crossed Garfield Ave. at the 1200 block were removed in July 1928.

Beginning May 7, 1893, DSR began operating the free ferry boat "Estelle" between Rice's Point and the south end of the Tower Bay slip (near 3rd St. and Tower Ave.) as well as Connor's Point; connections with SRTR cars were made at both points. It is not known how the two companies shared the capital, operating

N.J.

The Duluth City Council appointed a committee on January 31, 1893 to confir with ~~with~~ DSR for a Bill on a proposed bridge ~~to~~ be presented to the State House of Representatives. Long

Ave. Tracks on the Bridge were narrow-gauge, inas much as SRTR ~~were yet~~ operations ~~were~~ in Superior were yet narrow gauge. DSR's operation was standard gauge.

follows: The Duluth - Superior Bridge Co. (DSB) ~~was~~ funded by the C&N Rwy. ~~and~~ was founded in 1894 to build a bridge connecting Conner's Point in Superior to Rice's Point in Duluth. DSB made

and maintenance costs of their joint and varied interstate operations before the 1900 merger.

At some time in 1892, the West Superior Rapid Transit Co. operated a jointly managed ferry between the Tower Bay slip and a dock located at or near the foot of 2nd or 5th Ave. W. in Duluth. Little is known of this strangely competitive situation which probably ceased operations in June 1893, when DSR began its ferry operation. Apparently there was competition of a not-too-happy nature between these two ferry boat operations.

Superior Rapid Transit extended its INTERSTATE line to the tip of Connor's Point in mid-1893, where it provided a ferry dock, platform and shelter (see 3.10). Interstate ferry service began June 11, resulting in a shorter crossing. Ferry service continued--when navigation conditions permitted--until the building of the ~~D-SB~~ Duluth-Superior (Interstate) Bridge (D-SB).

In the winter months of those early years, with the shutting down of navigation due to the freezing over of the St. Louis Bay, several modes and devices were used when ice halted the operation of the ferries. In the winter of 1893, beginning December 22, a "barge" (sled), designed by DSR's General Manager Herbert Warren, and ~~probably~~ operated by DSR, The sled consisted of a substantial "scow" under which were located regular sleigh runners; on the deck was a structure fitted like a streetcar body. An electric motor on the shore operated a drum over which was run an "endless" wire cable which was attached to the sled, thus pulling the sled back and forth across the bay ice. The sled seems not to have been a satisfactory operation.

During the winters of 1894-95-96-97, while the navigation season was closed, SRTR and DSR jointly erected and utilized a temporary, low (about three feet above the water line) single-track timber trestle. The DULUTH COMMERCIAL of December 3, 1894 gives this account, "The freezing over the bay...will have a big compensation for people who make...trips between Duluth and Superior. Heretofore they have generally had to walk the 1000 feet...across the ice between the two street car terminals, but this winter there will be no walking. Already a pile driver is at work putting in the foundations for a temporary bridge on which the cars of the SRTR Co. will cross to the Duluth side of the bay." Service began December 22 when SRT cars crossed the Bay to Garfield Ave. The temporary winter service for the 1894-95 season ended on March 21 when the seasonal opening of navigation required removal of the trestle across the channel. The trestle and tracks were of a temporary and a not-too-substantial nature; there were doubts at times about the safety of the structures. The whole matter of travel between the two cities was less than desirable and satisfactory. And each inconvenience, delay and temporary expedient added impetus to a desire for a permanent all-weather bridge across the channel.

b. The need for a bridge across St. Louis Bay connecting Duluth and Superior caused the incorporation of the Duluth-Superior Bridge Company (D-SBC) prior to 1895, but the names of the officers and directors are not known. Interest in combining the street railway systems of both cities under one management had led to the incorporation in June, 1894, of the Duluth-Superior Traction Co. of New Jersey by Luther Mendenhall (President), G.G. Hartley and Thomas Lowry. The principal office was located at Elizabeth, N.J. This corporation proceeded to acquire 2,991 shares of Duluth St. Ry. $100 par value stock for $1,999,000 (the total amount of DSR stock with the exception of directors' qualifying shares in the amount of $1,000) in exchange for capital stock of the D-STC of N.J.

Long and patient efforts in the legislature of Minnesota beginning in 1890, and by both states in 1893, finally produced a Bill, January 1, 1896, authorizing a bridge between the two cities, connecting Rice's Point in Duluth to Connor's Point in Superior. DSR and SRT began then to make plans for the joining of the two rail operations which building of the bridge would make possible.

Documents in DSR files indicate that D-STC became involved in the bridge construction; lack of complete information creates confusion as to what actually occurred. What is known is summarized as follows: ~~D-STC~~ made an agreement with the ~~the Duluth-Superior Bridge Co.~~ (DSB) June 23, 1896, to the effect that D-STC would construct the bridge in exchange for $200,000 in capital stock, $650,000 in first mortgage bonds, and $300,000 in second mortgage bonds of the D-SBC. On July 31, 1896, D-STC made another agreement with the D-SBC to lease the completed bridge from D-SBC for a period of thirty years from May 1, 1897, the date on which the bridge was to be completed. Also on July 31, 1896, D-STC made a joint lease

bridge
agreements. This was the
first to cross the harbor/bay.
Legal entanglements with land-
owners at the Superior approach
to the bridge caused serious
interuptions in its construction.
The bridge was dedicated on
April 1, 1897; construction was
completed on July 13. DSR was
permited to make trial runs
over the bridge as early as
May 28. Through operation of DSR
cars began September 1, with DSR
cars operating on

agreement with DSR and SRTR for use of the bridge by streetcars. On August 1, 1896, the D-SBC conveyed all its property and franchises to a trustee to secure payment of $650,000 in bonds that had been issued by D-SBC. Then on August 12, 1896, D-STC sold to Stephen T. Norvell (who was also the Receiver of SRTR) a one-half interest in the two lease agreements of July 31, 1896. By July 1, 1897, when the bridge was substantially completed, D-STC owned only $100,000 in capital stock and $108,000 of first mortgage bonds of the D-SBC which makes it appear that most of the actual bridge construction was performed through the D-SBC. Meanwhile the Duluth-Superior Traction Co. of Connecticut had been incorporated in January or May, 1897, by A. Heaton Robertson, Henry Sanford, J.M. Hall, Morton F. Plant, R.G. Erwin, W.P. Douglas, and C.A. Congdon (a group apparently organized by Thomas Lowry) with its principal office in New Haven. The D-STC (Conn.) voted to issue $2,000,000 in capital stock in exchange for an equal amount of capital stock of the D-STC; all of the assets, property, contracts and leases of the latter company were assigned to the former company effective July 1, 1897. The ~~D-SBC~~ DSB subsequently defaulted in payment of principal and interest on all of the bonds secured by the trust deed and was forced into receivership by January, 1899. (G.G. Hartley was appointed Receiver on April 4, 1899.) On November 8, 1899, the trustees commenced a foreclosure suit against D-SBC. In order to discontinue the foreclosure suit, discharge the receiver and restore control of the bridge to D-SBC, a series of agreements was entered into between D-SBC, D-STC, and DSR whereby all of the original contracts, leases and assignments were canceled or modified so as to result in DSR leasing the bridge from D-SBC. The agreements were dated November 1, 1900, but not executed until January 1901. The D-SBC subsequently became an affiliate of the Great Northern Ry. DSR gained control on April 20, 1927.

Construction of the bridge, quite commonly known as 'THE INTERSTATE BRIDGE', seems to have begun in August, following the July 31, 1896 lease agreements.

... on this extension of the GARFIELD AVE. line, then double track on Pine St., Arthur Ave., and on the BRIDGE and both approaches. These cars ran to 22nd Ave. E. Foot traffic had begun on July 13. About 600 feet of track on Garfield Ave. from Pine St. to the ferry dock, became redundant and were abandoned at this time.

Superior Rapid Transit operations were still narrow gauge at this time, so it was necessary for passengers to transfer between cars of the two gauges at the Superior approach to the Bridge; through interstate operations did not come until 18 months later. After delays, brought about primarily by financial difficulties, SRT's conversion of its interstate line from narrow to standard gauge along Conner's Point, 3rd St. and Tower Ave. to Belknap, continued through the summer and fall of 1898. Through operation began on March 28 the following year with cars of both companies operating over the bridge (see 3.10).

A loop track was built on Arthur Ave. at the north approach to the bridge in August 1906 (when a collision seriously damaged the bridge and put it out of use for two years). This was originally referred to as the ALGER-SMITH loop because of the close proximity to the lumber mill of that name, but in later years was more logically referred to as the ARTHUR AVE. LOOP.

Tragedies caused disruptions of service over the bridge several times through the years. Major disruptions: collisions by ships closed the bridge from August 11, 1906 to September 24, 1908; from November 21 to December 19, 1924; and for several other short periods. Sparks from the great forest fire burned the north approach to the bridge on October 18, 1918. One track was reopened on November 7, and both tracks on November 30. During these periods when the bridge was out of service, it was necessary for DSR to make hasty arrangements for an alternate ferry boat service to cross the bay, and the Garfield Ave. tracks were extended, temporarily, the 600 feet from Pine St. to a ferry dock (see 4.43).

The INTERSTATE-GARFIELD AVE. line became one of DSR's busiest lines. The success of this line is reported in the TRIBUNE of May 14, 1894. "The street railway and ferry route between Duluth and West Superior had encroached so upon the business of the railroad (NP) that they did not pay. Every 8 minutes an electric car passes (5th Ave. W.) bearing the sign "Garfield Avenue & West Superior" which connects with swift steam ferries that run to both Connor's Point and Tower Bay slip..."

The rail line was abandoned on June 5, 1935 when most of the remaining rail lines in Superior were abandoned.

2.13 WEST 4TH ST.

In its April 29, 1889 order-- coincident with the electrification agreements, and the revised franchise-- Council had ordered a line built on 4th St. DSR promptly built the EAST 4TH ST. line as far as 14th Ave. E., and extended it twice in less than a year thereafter. A considerable amount of equipment and construction material remained after NWTHE built the SUPERIOR ST. and E. 4TH ST. lines. This was set aside in February 1891 for the construction of the WEST 4TH ST. line (still in litigation). DSR, however, had consistently maintained that a line on W. 4th St. was neither practical, desirable nor necessary. Thus the WEST 4TH ST. line was the ill-conceived result of persistent demands placed upon DSR by pressure groups and Council for a line on the central hillside. Herbert Warren, DSR General Manager, had these observations in an inter-office memo years later on August 10, 1925, "This line never should have been built in the first place, and we are in hopes that it will never have to be completely rebuilt. But the abandonment of the line is a very difficult matter to bring about..."

Construction began July 30, 1892, at which time the TRIBUNE reported, "...the W. 4th St. cars will eventually run to West Superior. On reaching Piedmont Ave. E. (Mesaba) at...5th Ave. W. the line will run down hill to Michigan St...Garfield Ave....and thence to the extreme end of Rice's Point." This, of course, was not practical. Although the original order was to build the line to 14th Ave. W., DSR finally and very reluctantly built only as far as 5th Ave. W.

Service began on November 4, 1892, three and a half years after the order, double track on 4th St. from 6th Ave. E. to Lake Ave., then single track to 5th Ave. W. (Mesaba Ave.). Originally the line ended as a single track at the east property line of Mesaba Ave. A wye was installed in that intersection in 1903 when single-end cars began operating on the line. The double track was cut back from Lake Ave. to 2nd Ave. E. in July 1909.

Public hearings on July 10, 11 produced little opposition, and the line was abandoned July 24, 1930, the first rail line to be abandoned in Duluth. ~~(See 4.29 for operation of this line).~~

* * * * * * * * * *

DSR added twenty miles of track in the first two years of electrification. The severe economic decline that followed the Panic of 1893, two disastrous strikes, and the bicycle craze of 1893-96 brought street railway revenues to serious lows, and forced much belt-tightening. The 1890s were difficult days for DSR. In a board meeting March 1, 1898 it was determined, "...that no new work or new enterprises shall be undertaken by the company." The W. 3RD ST.-GRAND AVE. line was the only track constructed in the recessional ten years, 1893-1902.

2.14 WEST 3RD ST.-GRAND AVE.-FAIRMOUNT PARK

"An Ordinance Granting to the (DSR) Co. the Right to Construct, Maintain and Operate Street Railways in the Village of West Duluth", was passed by the West Duluth Village Council on July 13, 1891. This lengthy ordinance prescribed the extent and manner of construction of street railways in West Duluth, and between West Duluth and existing lines in Duluth, the speed, frequency and types of service, fares, snow removal, licenses, types of cars, conduct of personnel, and a forfeiture clause. The same, "...shall be completed and in operation before...July 1, 1892." No action was forthcoming from DSR.

Two years later, on April 3, 1893, the Council had additional and ambitious plans when it ordered DSR to build a double-track line on Grand Ave. from Grassy Point Addition (about 71st Ave. W.) eastward to an unspecified point, "...connecting with the present street railway system in Duluth." Still no action was forthcoming from DSR.

By resolution of May 14, 1895, Council ordered the WEST 3RD ST. line to be completed by August 20. A double-track line was ordered on 20th Ave. W. thence west on 3rd St. to Collingwood Ave. (40th Ave. W.), though the Duluth City limits at that time extended only to 33rd Ave. W. However, DSR was in the same perplexing situation that it had been on numerous occasions before: 3rd St. was not improved west of 28th Ave. W. Then, to make the situation even more difficult and equally ridiculous, the West Duluth Council, on September 16, 1895, ordered the line built further west to Gogebic St. in Ironton (Riverside)! (See 3.20). To satisfy the original order, DSR intended to lay rails on 20th Ave. W. between Superior and 3rd Streets as ordered by Council. However, there was an abrupt change of plans, with the announcement on September 4, that the 20th Ave. route

plan had been dropped in favor of a Piedmont Ave. route. DSR had been in a running battle with the city since the PIEDMONT AVE. line had been ordered in May 1892...and not yet built. Perhaps DSR had used this device to pacify the Piedmont Ave. protagonists. Council ordered this alternate route on September 18.

This change of plans required the very difficult task of putting streets through rock, around the Point of Rocks, and up Piedmont Ave.'s steep grade. Even the normally routine tasks of setting trolley line poles became a major undertaking along this solid rock stretch from 13th to 19th Avenues W.

Construction of this 3rd ST. line seems to have been under way in late 1895, double track from 13th Ave, W. and Michigan St., northwest to Superior St.,to Garfield/ Piedmont Aves. to W.3rd St. to 37th Ave. W., then single track to 40th Ave. W. Trial runs were made June 30, 1896; revenue operations over the line began the following day, "...making this beautiful spot (Lincoln Park) accessible" ...DULUTH NEWS-TRIBUNE, July 1.

For the extent of rail lines in West End at this time see map on 2.12.

By resolution of September 3, 1901, Council reminded DSR that it had neglected to fulfill the provisions of the 1891 ordinance (to extend its tracks to West Duluth). DSR's reason for non-compliance was the same as on many occasions previously: streets were not adequately prepared for the laying of street railway tracks.

By resolution of October 1, 1902, Council stated that, "Public necessity demands..." and ordered tracks laid on 23rd Ave. W. between Superior and 3rd Streets. No further action is recorded.

Extension of the line to 71st Ave. W. was ordered by Council on March 19, 1902 and again on October 28, 1903. DSR appealed the order, stating that bridges at 61st and 66th Avenues W. were not suitable for the operation of street cars. The bridges were subsequently upgraded and Council reissued its order on September 8, 1904, emphasizing its request with the reminder that it (the city) had recently acquired considerable land for a city park (Fairmount Park) on the north side of Grand Ave. in the vicinity of 72nd Ave. W.

The tracks on Grand Ave. were extended incrementally over the following nineteen-year period, beginning at 40th Ave. W. in 1903, with extensions reaching 60th Ave. W. on August 12, and 71st Ave. W. (Fairmount Park) on October 1, 1905. Double tracks reached 71st Ave. W. in October 1915, at which time work began immediately on the extension to Riverside and Morgan Park (see 2.19).

Single-track extensions	Double-track extensions
August 12, 1903 to 60th Ave. W.	October 1, 1905, double track from 47th to
October 1, 1905 to 71st Ave. W.	49th only to provide a passing track.
	October 1909, 37th to 57th Avenues W.
	July 1911, 57th to 63rd Avenues W.
	October 1915, 63rd to 74th Avenues W.

A wye was installed at 39th Ave. W. in 1907. It- the tail track-- was extended 600 feet in July 1912 to provide additional storage track (10 car capacity) for circus ground cars.

A wye was installed at 57th Ave. W. in July 1911.

With the building of the PIEDMONT AVE. line to 10th St. in 1910, a more suitable low-grade route for WEST 3RD ST. cars through West End seemed advisable. Accepting DSR's recommendations, Council on May 24, 1911 ordered tracks built on 21st Ave. W. from Superior to 3rd Streets. DSR had difficulty obtaining the necessary track switches; the routing on 21st Ave. was not accomplished until May 1, 1912. The tracks on W. 3rd St. between Piedmont (19th) and 21st Avenues W. thus replaced were abandoned and removed.

On December 21, 1904, Council requested that a study be made of a possible rail route on the West Duluth hillside. No further action is recorded.

Rail service on W. 3RD ST.-GRAND AVE. ended July 8, 1939, at which time it was replaced by gas and trolley bus service.

2.15 57TH AVE. W.

Tracks on Grand Ave. had reached and passed 57th Ave. W. in 1903. During the summer of 1906, a single-track line was laid up the hill on 57th Ave. W. from Grand Ave. to Medina St., close to the DM&N tracks.

Service on the line began October 15, 1906.

The track was originally on the east half of the street, but was moved to the center during the repaving of the street in 1927. A wye track was installed at 57th and Grand in July 1911.

The rail line was abandoned May 2, 1939.

On January 19, 1909 the City Engineer reported that a satisfactory grade was available for a street car line to Proctor. In December 1916 and again in November 1923 there were ambitious schemes to extend the line to Proctor; the proposed routes were not clearly defined and nothing seems to have come of these plans.

2.16 PIEDMONT AVE.

On October 10, 1890, M.B. Harrison, a developer, announced that $10,000 had been raised to build a trolley line on 24th Ave. W. to Piedmont Ave. Nothing more of this plan seems to have developed.

On May 18, 1892 Council ordered, "...a single or double track..." line built on Piedmont Ave. from Superior to 13th St. contending that the avenue, "...has been...put in suitable condition for the operation of a street railway thereon..." which, of course, later events proved otherwise. DSR took no action other than a firm refusal to comply. On September 4, 1895 DSR announced that it would route its then-to-be-built WEST 3RD St. line via Piedmont Ave. from Superior to 3rd St. (instead of via 20th Ave. W. as previously ordered and planned) (see 2.14). Council evidently thought it psychologically timely to use this event to again, on October 9, 1895, order the line built. Still no action by DSR.

The impasse rocked along until, in August 1904, DSR stated its apprehension about a trolley line on Piedmont Ave.— an avenue of many curves and an average grade of 7 percent, too difficult, they said, for the operation of conventional electric cars. The thinking ran to possible alternatives: cable cars or an incline railway. Again, on June 19, 1907, the Council ordered the line built. DSR was by now agreeable to the task, but the city had not yet established a satisfactory grade on the avenue. Then, finally, in 1910 the line was built from 3rd to 10th Streets.

Construction began April 1, was completed May 25, and service began on June 1— eighteen years after Council had first ordered the line built.

The PIEDMONT AVE. line had the dubious distinction of being DSR's "crookedest" line. Except for short sections of tangent (straight) track connecting curves, the entire line was a series of curves, double track to 22nd Ave. W. and Voss St., single track to the end of the line.

The rail line was abandoned on May 10, 1934, and replaced by gas and trolley bus service on August 5.

In March 1912 the Union Scandinavian Cemetery Association started a movement for a street car line extension north and west from the end of the PIEDMONT line to Hermantown, Adolph and Proctor. Nothing, of course, came of this proposal.

2.17 EAST 9TH ST.-EAST 8TH ST.

Many were the problems and difficulties that delayed the construction of the EAST 9TH ST. line— over three years from initial preparations to completion of track laying.

In preparation for the building of the line, DSR moved the existing tracks between 2nd and 4th Streets from 6th Ave. to 5th Ave. E. in June 1909, providing an easier grade between 4th and 5th Streets (see 2.5).

Although the rails were purchased in 1910 and DSR was ready to proceed with the project, construction of the line was delayed for nearly two years. It was necessary, first of all, for the city to provide an improved grade on 6th Ave. E. between 5th and 7th Streets, which required the building of the Brewery Creek culvert and establishing of a grade on the avenue. Council was able, finally, to order the line on June 5, 1912. The violent two-month strike of car men in September-November 1912 brought about some delays in the final weeks of track-laying. Switches and other special work for the complex track work at 5th Ave. E. were installed October 26-27.

1912

City and company officials made an inspection/courtesy trip over the new line on October 31, and revenue service began the next day, November 1, a double-track line from 4th St. with a single track only from 9th to 13th Avenues E.:

(In September 1919 DSR temporarily extended its tracks east from the loop at 13th Ave. E. so that its work cars could haul material to the site of the concrete arch bridge being constructed by the City across Chester Creek (Chester Park was Duluth's first park.))

OK

Although plans for extending the EAST 9TH ST. and KENWOOD AVE. lines were finalized in early 1921, prolonged litigation over its charter and the associated threat of a surrender of its franchise, put almost all rail line construction in Duluth in limbo for two years. Council, by an August 7, 1922 resolution, ordered DSR to build the EAST 9TH ST. and KENWOOD AVE. extensions. DSR, in an April 17, 1923 letter of intent to Council, was agreeable to the EAST 9TH ST. extension, but not KENWOOD, an extension that DSR felt was not economically advisable (see 2.18), offering, instead, a bus operation. In the several following weeks, the situation became hopelessly bogged down as a result of overwhelming burdens placed on DSR: additional demands for extension of the PIEDMONT AVE., and EAST 4TH ST. lines, and paving of several streets and at a time when DSR was making costly capital improvements to its 26-27th Ave. W. facility. Finally, on May 25, 1923, Council accepted Mayor Snively's recommendation that the EAST 9TH ST. line be extended immediately according to DSR plans, that the KENWOOD AVE. line be extended a year later, and that all other demands be denied.

Council ordered the extension on May 28. After studying several possibilities for an eastern terminal location for the line, DSR received deeds for two lots for a loop at Kent Road on June 23. On the date before, Council approved all DSR plans for the line, and construction began immediately, beginning with the double-track extension of the EAST 9TH ST. line east from 9th Ave. E.

Test runs and crew familiarization runs were made on August 30. Revenue service began two days later, on September 1, double track on East 9th and 8th Streets to 19th Ave. E., crossing Chester Creek on the recently-built concrete-arch bridge, then single track to an off-street loop at Kent Road. Cost: $70,000.

In March 1913, a spur track was built into a gravel pit, for which four 50 x 140-foot lots had been purchased east of 8th Ave. E. on the north side of E. 9th St. The gravel pit became redundant when construction of the Chester Park bridge was completed. So, in 1921, the spur track was removed and the two lots were sold (for $1673).

With the building of the EAST 9TH ST. line, the 5th Ave. E. and 4th St. intersection became the greatest concentration of special-work (switches, crossings, etc.) on the DSR, edging out only slightly the concentration at Garfield-Piedmont-Superior St.

Rail service ended on July 8, 1939.

2.18 KENWOOD AVE.

Construction of the KENWOOD AVE. line began in August 1917.

Service began on October 10, double track from 9th to 12th Streets, single track to a loop at 14th St. (see track diagram above). DSR incurred a considerable expense blasting and removing rock for the 14th St. loop.

Requests for an extension of the KENWOOD line brewed for several years thereafter. Finalized plans in 1921 to extend the EAST 8TH-9TH ST. line reinforced demands for an extension also of the KENWOOD line, "...equal in length to the East 8th St. extension." DSR was not in favor of building the KENWOOD line extension, all except the last half-mile of which was through a wholly undeveloped, uninhabited semi-rural area, a situation that, DSR foresaw, would produce marginal revenue. (See 4.32). Construction of the tracks required a costly relocation of a portion of the avenue, considerable upgrading of its entire length, and several cuts and fills on which was known as Farrell Road at that time.

As was too often the case, rail line extensions were tied to fare increases. And so, again, litigation began July 21, 1923 in which extension of the KENWOOD AVE. line was conditioned on a fare increase in Duluth to 7 cents.

Construction of the extension began May 15, 1924 with conversion of the single track north of E. 12th St. to double track, extension of this double track to Allen Ave., and then single track to an off-street loop at St. Marie St., for which DSR had purchased three 40-foot lots.

Service began September 1, one year after the E. 9TH-E. 8TH Streets line began service. The original loop at 14th St. was abandoned at this time, and the displaced rails were used to replace/improve the troublesome reverse curve on 14th St., Park Point (see 2.21).

A wye was installed at 7th Ave. E. and 9th St. the previous October (1923).

Rail operation was discontinued August 31, 1936, pursuant to an order by Council and County commissioners dated April 17, 1936. However, when scheduled delivery of replacement buses continued to be delayed and DSR had insufficient buses to serve the line properly, an unprecedented, urgent restoration of the rail service became necessary. The rails were dug out of the street, poles and overhead trolley wires were erected, and a cross-over switch was installed at 12th St. to provide a temporarily-restored rail service, beginning November 30 to 13th St., using double-end Birney cars until final abandonment on February 21, 1937. (See 4.32 for details of this operation.)

(Since the late 1880s, DSR had sought a reasonably easy grade to the top of the central hillside- one that would not require an inclined plane or other device. A comprehensive study in 1915 produced a tentative route with a maximum 3.5% grade for the long climb. The KENWOOD AVE. line was built, in part, eventually, on this proposed route.)

2.19 MORGAN PARK (RIVERSIDE, IRONTON)

U. S. Steel Corp. acquired 1700 acres of what was then known as Spirit Lake Park along the Minnesota side of the St. Louis River in 1907, upon which to build a steel mill, an affiliated Universal Portland Cement plant, and "...a planned company town...", an identity that was changed in June 1914 to Morgan Park, to honor the memory of the late J. Pierpont Morgan who founded the U. S. Steel Corp. in 1900. Platting and construction of the community began in August 1913, and residents began to move in the next summer. Though construction of connecting tracks for the two feeder railroads, a bridge across the St. Louis River and utilities at the plant site had begun in 1907, construction of the mill was not completed until spring 1915, with the first steel being produced December 11.

As early as 1895, when construction of the WEST 3RD ST.-GRAND AVE. line was being considered, there were demands for an extension of that line to the industrial complex and community of Ironton. Ironton and the adjoining area along the St. Louis River were annexed in 1894.

And as early as 1909, DSR anticipated a street railway extension to Morgan Park. The 1909 annual report to DSR stockholders stated, "The U. S. Steel Corp. has...acquired the site for a steel plant to be located on the...St. Louis River...The building of the steel plant will undoubtedly require the Company, within the next two years, to extend its lines...to the site...the distance being about 2 1/2 miles from the present terminus of the Grand Avenue line (71st Ave. W.)."

And on March 31, 1912, the Duluth NEWS-TRIBUNE reported, "The West Duluth Commercial Club wants to get a good road to the steel plant this year, as well as an extension of the car line over the same highway."

Though the steel plant in Morgan Park went into production in 1915, it seems that some delay in building the trolley line was attributable to Council's objection to DSR's desire to collect a 10 cent fare- two regular nickel fares- which DSR felt necessary because of the long distance involved (9.95 miles from 3rd Ave. W. to Morgan Park loop). At the then regular 5 cent fare, that computes at 1/2 cent a mile.

On October 29, 1915, two years after construction crews completed the double track to a loop at 71st Ave. W. (see 2.14), construction of the line continued westward. A double-track trestle over Kingsbury Creek was built from 72nd to 74th Avenues, then single track to E. 84th Ave. (.91 miles) where work was halted by cold weather. The trestle was filled during the winter of 1918-19.

Construction of the line resumed in the spring of 1916, with sections of both single and double track being laid through Riverside to the Northern Pacific Railway underpass in Smithville in May, and to a loop in Morgan Park by June 1. The mayor, councilmen and DSR officials rode a chartered car over the new line on June 10. Earlier in the day, familiarization trips for motormen and conductors were run over the line.

Revenue service began June 16 (1916), at which time the line appeared thus:

OK

Single-track portions of the line were converted to double-track during August of the following year (1917), the work being completed in October 11.

The large numbers of shipyard workers that utilized the newly-built MORGAN PARK line (see 4.7) required the dead-heading of cars to and from the Morgan Park loop. To improve the critical situation, and eliminate 3.25 miles of dead-head operation on each round trip, a loop track was built at 92nd Ave. W. in November 1917. Sub-station #2 was built inside the loop to provide power for the additional loads. It became operational on May 9 of the following year.

To provide car storage for shift changes at the steel mill, a 2-car spur within the Morgan Park loop was added in 1918.

The Barnes-McDougall Shipyard Co. and other facilities in Ironton, employing 4500 workers, began large-scale operations for the U.S. military on October 18, 1917, building 46 excellent sea-going ships, referred to locally as "salties". At the request of the shipbuilder, the plant-site name was changed from Ironton to Riverside on June 15, 1917, at which time the shipbuilder's name was changed to McDougall-Duluth Co.

DSR's tracks through Morgan Park were unique in that: 1) They were laid in a center reservation, the only such in Duluth-Superior. 2) They were laid on land owned by the Morgan Park Co.; the only other privately-owned right-of-way- except loops, was the short piece in Billings Park (see 3.12). The trolley wires, by the way, were the only above-ground wires in this "model city".

Most of Morgan Park streets were changed from names to numbers and letters on May 1, 1930.

When built in 1917, the double track on Grand Ave. was side-of-the-road, both tracks being laid south of the center of the street from 83rd to 93rd Avenues W. During the repaving of Grand Ave. in 1920, the west-bound track was moved to a normal alignment.

(Due to an apparent error or conflict of two adjoining incorporated areas, duplicate street numbers, 81st to 85th Avenues W. were produced. DSR resolved the situation by designating them E81 and W81, etc.)

The MORGAN PARK line was abandoned on July 8, 1939, at which time the 92nd Ave. W. loop and sub-station were also abandoned (see 5.58).

2.20 GARY-NEW DULUTH

Rumors of proposed industrial developments— steel mill, cement plant, railroad yards and others— brought about a real estate sales boom in New Duluth as early as October 1890.

Following the completion of the MORGAN PARK line in October 1917, construction of tracks continued westerly in mostly continuous curves from the Morgan Park loop, along Idaho-West Boulevard to Commonwealth Ave. (100th Ave. W.). The double tracks were laid on the south and west sides of all streets. On Commonwealth Ave., construction was single track, east side of the street to the DM&N underpass, where the tracks became center-of-street to a wye at the McCuen St. end of the line. There was a 200-foot passing track between Gary and House Streets. The track crossed the seldom-used Spirit Lake Transfer RR. spur track at grade between House and Cartaret Streets.

2.21 Park Point

6 1936 Preperatory to sale/rental, DSR tore up tracks in front of Park Point carhouse

10 2 91

* Not much construction is possible during Northern MN winters.

xxx Franchise transfered to Park Point Traction Co. 7-7-13. Acquired by DSR 8-25-17.

~~DSR contracted to carry US Mail~~

~~US Mail contracts in Duluth & Superior.~~

~~No freight or express 12-27-86~~

Park Point St. Ruy incorporated 12-27-86. No action.

Minnesota Point St. Ruy MPSR incorporated 4-87. Village gave franchise to ~~M~~ 0 on 6-23-87. Village of PP. Village contracted for operations 1-1-89. Control of MPSR passed to "Eastern Management" on 5-96. Auction 3-19-98. Reorganized as Interstate Traction Co 11-16-98. xxx

YES.

9-1-92

[illegible]

XXXX

2.21 PARK POINT

Land & River Improvement Co. conveyed to the City grants of 9 easements, questionable street rights beginning in December 17, 1884.

X

The line had originally been planned to Prescott St., one block further south, but a steep down-grade south of that intersection would have created a hazardous situation.

Familiarization trips for car crews were operated December 31. Revenue operations began the following day, January 1, 1918 (the nickel fare returned the same day).

Materials for construction of the GRAND AVE.-MORGAN PARK-NEW DULUTH lines and the 92nd Ave. W. loop were delivered to DSR by the Northern Pacific Railway at 85th Ave. W. where a 600-foot connecting spur track from Grand Ave. to the parallel railroad was built on July 25, 1917 (see track diagram above). The spur was removed on February 19, 1918.

The NEW DULUTH rail line was abandoned west of the Morgan Park loop on May 5, 1937. Street paving operations on Commonwealth Ave., however, so seriously interfered with the replacement bus operation that it was necessary to restore a portion of the rail operation on June 6 west and south from the Morgan Park loop to a temporary wye near the DM&IR underpass at the west gate of the cement plant, adjacent to the MP&L substation and utilized until the end of rail operation on July 8, 1939, thus:

(See 3.21 for a proposed extension of the MORGAN PARK line to South Superior.)

With over 100 miles of track in operation on January 1, 1918, and with a heavy volume of passengers generated by a vigorous war-time economy, DSR was brought to the threshold of what was to become its era of greatness. Nationally, at this time, 100,000 street cars were operating over 45,000 miles of track.

2.21 PARK POINT

The Park Point Street Railway was incorporated on December 27, 1886. There is no record of track construction having been undertaken by this company.

The Minnesota Point Street Railway (MPSR) was incorporated in April 1887. Although granted a franchise June 23 by the village of Park Point to build, operate, and maintain one mile of track within one year, more than a year had passed before MPSR announced that construction would begin September 31, 1888. On December 18 the company secretary reported that 1.4 miles of narrow-gauge (3 foot, 6 inch) track had been completed--probably along Lake and Minnesota Avenues from Fulton (7th) St. or Marvin (8th) St. to Pine (19th) St. On January 1, 1889 the Village Recorder was instructed to notify MPSR that its contract with the Village had expired December 23, but that MPSR was expected to begin horse car operations "on or before" January 7. MPSR and citizen groups requested and were granted an extension of the operations deadline to May 15. The Village was annexed by the City of Duluth on this date. The Duluth NEWS-TRIBUNE reported, on August 6, that MPSR would extend its tracks to the Oatka Beach at 39th St. Prior to its incorporation, "The Point", as Duluth's habitues call it, was originally known as Middleton.

The first known street cars to arrive on The Point were two horse cars, 4, 14, that became available in July 1890 when DSR was in the process of converting from narrow-gauge horse cars to standard-gauge electric cars, a timely, fortunate development for MPSR (see 4.36). So, although there is no record otherwise, it is highly probable that there was no street railway operation on The Point before this date. Within the next two years, six more similar DSR horse cars went over to The Point: #1, Dec. '91; 5, 7, 10, 13 May '92.

DSR sold $618 worth of "steel rails" to MPSR in June 1891. This was, quite probably, light-weight rail that DSR removed when conversion was made from city streets

xx line. With single-track
operation and fog, there
was much concern about
safe operation. A Nachod
signal system was installed
in February 1930 to minimize this
danger.

conversion. ITC laid a temporary "power" cable across the Canal – over the Aerial Bridge span – in April 1901, furnishing enough power to operate one car.

In late 1899 or early 1900 (nothing is built during the severe winters on Park Point!) ITC built a pavilion at Oatka Beach (39th St.). Track sidings were installed to inhance the anticipated increase in passenger traffic. And additional open "summer" cars were obtained. The season's first car operated March 30, 1901.

double-end

time. Equipment: cars 285, 286, 287, 288, plow 5/149 and wire car 2/148

~~2.21~~

xx ~~5.36~~. At this point in time (1905), the Park Point operation now had 6 double-truck, 4 smaller single-truck, and 6 open "summer" trailers, "sufficient cars to serve White City Amusement Park crowds this summer." ... operation of the cars began July 1. Until then, operations on The Point had been summer only. The Park had financial difficulties and shut down after the 1908 season.

from horse car narrow-gauge track to standard-gauge track in June 1890. MPSR reported three miles of track in operation in summer 1892, the line having been extended to the Oatka Beach facility at 39th St.

Control of MPSR passed into the hands of Eastern (absentee) management in May 19, 1896. Serious financial difficulties developed by late the following year. After several corporate changes, including an auction of the property on March 19, 1898, the operation emerged on November 16, 1898 as the Interstate Traction Co. (ITC), with ambitious plans for expansion and improvements. It was in that year that the City of Duluth instituted scheduled steam ferry service across the Canal.

Electrification and conversion to standard gauge ~~and the addition of sidings~~ to improve the single-track operation were accomplished by June 20, 1899, there being limited dual-gauge operation during the period of conversion.

After several more years of planning and postponements, the tracks were extended from Oatka Beach (39th St.) to 43rd St. in June 1904. Big things happened to the diminutive, little operation in 1905. ITC involved itself in expanding the Oatka Beach facilities, increasing its stated value (P&L statement) in those properties to $30,000. And, in that year, the Duluth Amusement Co. opened its White City Park at the south end of the line, to which DSR made a $3,300 stock subscription. But, of greatest importance, the newly-built Aerial Bridge began scheduled operations across the Canal on May 5, 1905. To handle the anticipated considerable increases in passenger traffic ~~(see 4.36)~~, the entire line was upgraded and converted to double track in April at a cost in excess of $31,000. There were 6.5 miles of track now. Year-round operation began at this time.

Each extension of tracks produced additional passenger traffic which, in turn, required additional passenger cars. (For this, see 5.29 and 5.36).

A fine, new 152-foot by 46-foot two-track brick car house, shop, store room, and office were built at 19th St. in 1906. And, during the following year, freight service (see 4.36) and a fire car operation (see 6.16) were begun.

Financial difficulties developed again in February 1913, and, after corporate changes and a reorganization, the franchise was conveyed to the Park Point Traction Co., a group of bondholders, on July 7. Paving of Lake Ave. in 1914 and Minnesota Ave. in September of the following year reduced the line to single track, with passing sidings at 15th, 28th, and 37th ~~Streets~~, there now being 3.6 miles of tracks. built in July 1916,

The line fought a losing battle for years with low traffic potential, declining revenues, deteriorating track and equipment, and drifting sand and snow. An unusually heavy snow on March 16, 1917 brought the operation to its knees, and from which it did not recover. DSR and the City helped dig it out. On June 15, DSR's Board approved purchase of the line; interim operation by DSR was assumed at this time. In spite of a deteriorated property and a deficit operation that would surely be substantial, DSR acquired the property and all rights two months later on August 25. Full operation of the line by DSR began September 1. Several economies were instituted in the next two years (see 4.36).

Although there was a considerable amount of rehabilitation, DSR was not able to bring the line up to DSR's otherwise high standards. The Park Point operation was a severe financial burden for DSR each year after its acquisition, but company policy was to continue to offer the best possible service in spite of great difficulties. The sand provided a poor roadbed for the light 35-lb. rail, and was the cause of speed restrictions and numerous derailments. The two curves on 14th St. were especially troublesome. This portion of the line was rebuilt in 1924 with heavier rail obtained from the dismantled loop at 14th St. on the KENWOOD AVE. line.

In April 1918 local residents requested and obtained improvement and paving of Minnesota Ave. from 38th to 43rd Streets. As a result, DSR was forced to move its rails close to the water's edge along the Bay, a situation that proved troublesome thereafter as wave action continually eroded the roadbed, threatening at times to impede safe operations. The considerable cost of building a retaining wall shows up as a cost in a 1926 Commission valuation report. No other details are known.

connected. Early stages of planning (March 1929) gave serious consideration to the building of a loop near 43rd St. on the south end of the line, which would have allowed the use of conventional cars — with narrow/normal wheel treads — on Park Point line. However, exhorbitent prices for the necessary three lots squelched all plans. Use of double-end cars continued until the end of rail operation in June 1931.

Until December 1, 1929, passengers transferred between cars of the LAKE AVE. line and the PARK POINT line by using ferry boats and/or the Aerial Bridge to cross the Canal. In 1929-30 the Aerial Bridge was rebuilt into a lift-type bridge, with double tracks on its 126-foot approaches and 388-foot span, thus, for the first time, affording through operation of PARK POINT cars to and from the mainland beginning on March 12, 1930 (see ~~4.36~~ 7.42).

The anticipated rebuilding of the Bridge posed some problems for DSR, chief among them being how best to integrate the PARK POINT operation with the rest of the system to which it would become physically connected. ~~Early stages of planning (March 1929) gave serious consideration to a loop near 43rd St. and the use of conventional cars on Park Point. This plan developed to the point of selection of 3 lots necessary for the building of the loop. This plan, however, was dropped in favor of several other possibilities when it was realized that the generally poor condition of the track on Park Point was not suitable for operation of any of the standard types of cars (Park Point cars were equipped with wheels of extra-width tires to compensate for the poor track). The final plan required no changes in the tracks other than those related to the bridge approaches (see 4.36).~~

Passengers, transferring between LAKE AVE. and PARK POINT cars, had been permitted to walk across the new but unfinished span beginning on January 10, and until through operation began on March 12. With start-up of through operation, the carhouse, shops and office at 19th St. were abandoned. The cars were maintained at and operated from the company's 26th Ave. W. facilities thereafter. The fire car operation, too, was terminated at this time. The small building on the west side of 19th St. and Minnesota Ave. that had housed the fire car was acquired by the City and used thereafter to house a fire truck.

DSR made application to City Council on July 2 (1930) for permission to substitute buses on Park Point. No action was taken. Then, on February 2 of the following year, DSR filed for rail abandonment in Federal Court. Permission was granted, and the rail line was abandoned on June 15, after only 15 months of rail operation over the Canal to the mainland.

A wye at 8th St. was probably originally used for car storage, for turning cars and trailers, and for facilitating the transfer of water-borne freight shipments. It was retired in October 1923.

In May 1896, MPSR announced plans to extend the tracks south to a point "opposite the docks in Superior's East End". A month later even grander plans were announced to continue the projected line as far as the Wisconsin ship canal where passengers would utilize a ferry to connect with a line running around the south shore of the Bay to Itasca and Allouez. Nothing, of course, ever came of these plans which, it would appear, were more a possibility than a probability.

2.22 CROSLEY

Referred to as the "Crosley Park" line until a few weeks before it was completed, there was even some indecision during the final days of construction over the naming of the oblique street that had been dedicated for construction of the line. Ordered by Council on May 17, 1926, the line was opened on October 1. With appropriate publicity and ribbon-cutting, officials of the city and DSR had ridden over the line the day before. In an atmosphere of austerity, the line had been built with used 80-pound rail and wood trolley poles, double track on 45th Ave. E. and on Crosley Ave. to 46th Ave. E., then single track to the loop at 52nd Ave. E. Following the abandonment of the EAST END line on July 27, 1934, (see 2.9), DSR tried unsuccessfully to operate the CROSLEY line via E. 4th St. Instead, it became a shuttle operation on October 1, utilizing double-end cars and a cross-over installed just north of Superior St. on 45th Ave. E.

The rail line was abandoned July 8-9, 1939.

The CROSLEY line was the last major construction in Duluth. There was, however, some track construction, alterations, loops and double-track extensions during the next ten years, with the 2nd Ave. E. loop being the last, in 1936.

* loop for counter-clockwise operation, and

2.23 MISCELLANEOUS ~~RAIL LINES~~ TRACKS

a. 8TH AVE. W.

A wye was installed at 8th Ave. W. in August 1901, to facilitate the turning of the then newly-arrived single-end, double-truck cars, thus:

This was replaced by a loop and a storage/ cripple track in April 1907.

b. 12TH AVE. W.

A wye, replacing a cross-over, was installed at 12th Ave. W. and Michigan St. in 1906 to facilitate turning double-truck, single-end cars operating then on a 12th Ave. W.-E. 4th St. routing. The wye track was extended into a City-operated rock quarry and crusher on Superior St. in 1908 (see 3.19).

The track was retired in early 1936, shortly after the INTERSTATE line was abandoned.

c. 12TH AVE. E.

For reason(s) not clearly recorded, a 1464-foot, single track was built on 12th Ave. E. between Superior and 4th Streets in 1891. By its very nature, it would seem to have been a temporary track.

A major sewer construction and street repair project on 2nd St. forced temporary suspension of E. 4TH ST.-WOODLAND through service beginning July 12, 1891, isolating that portion of the system (the tracks on 24th Ave. E. were not built until 1907).

The WOODLAND company's operators were experiencing considerable difficulties pulling trailers up 3rd Ave. W.'s steep grade (see 4.30). Using the 12th Ave. E. easy grade would have been much more desirable.

Either or both of the above situations could have been reason(s) for building the 12th Ave. E. track. It was a pawn in a fare litigation, and its use was terminated on May 19, 1894.

d. 32ND-34TH AVENUES W.

Several changes were made in the tracks on W. Superior St. in the vicinity of the DM&N ore docks. Sidings were installed as early as the late '90s. (See 3.19 for various uses of these sidings). One of these leads was extended June 5, 1907 around the curve onto Jenswold St., and served as a 600-foot, 11-car storage track during events at the ball park until abandoned in July 1929. The operating department referred to it, appropriately, as the "Ball Park Spur".

A wye was installed at 32nd Ave. W. in 1916. Improvements on Carleton St. required the installation of a 50' radius loop in the northeast corner of the intersection in August 1929 to replace the wye.

e. 37TH AVE. W.

During the boom years 1890-93, DSR accepted delivery of 67 street cars from the builders in St. Louis, four from the builders in Minneapolis, plus two large cars, structural steel, hoisting machinery and power plant for the INCLINE from the builder in Pittsburgh. In 1901 it received the first 12 of its fleet of large standards cars from the builder in Minneapolis. Just where and how these were unloaded and delivered to DSR rails seems not to be recorded. Nevertheless, in January 1901 the NP built a 365-foot spur from its main line to a connection with

As the Kenwood-East 8th Street line zig-zagged down the hill, it found flat ground on the east-west streets. At top is 4th Street at 5th Avenue East, with the West 4th Street line diverging in the foreground. The other photo shows streetcars on 5th Avenue East crossing 3rd Street. In both photos, note how the grade resumes away from the intersections.

adhesion grade was th 5 percent on Pittsburgh's Finevie.. line, which lasted into the 1960s. Of course steep grades are problematic when there is ice and snow. For modern light rail, anything over 5 percent is potentially unreliable when icy. Witness the concern over the Central Corridor's University Avenue hill behind the state capitol. The original alignment came in at about 5.5 percent. The solution was to eliminate the traffic signal stop at the bottom of the hill, so cars can get a run at it, and lower the grade itself to about 5 percent.

How steep were the grades on Minnesota's streetcar lines? In a old Duluth bus driver rule book, I found a few exact measurements of steepness. Otherwise, I measured elevation changes and distance on USGS topo maps. The elevation changes aren't exact because they are shown only to the nearest ten feet, but that's close enough to make a good estimate.

Not surprisingly, Duluth had the steepest grades in the state. One indicator of the steepness of the Central Hillside neighborhood is the pitch of the 7th Avenue West incline, which ranged from 15 to 25 percent. The steepest streetcar grade in the state was 10.17-10.65 percent on 2nd Avenue East from Superior Street to 2nd Street. This two-block stretch was constructed in late 1936 to provide an alternate route out of downtown for the Woodland line after the Lester Park line on East Superior Street was converted to trolley bus. It lasted until abandonment in 1939.

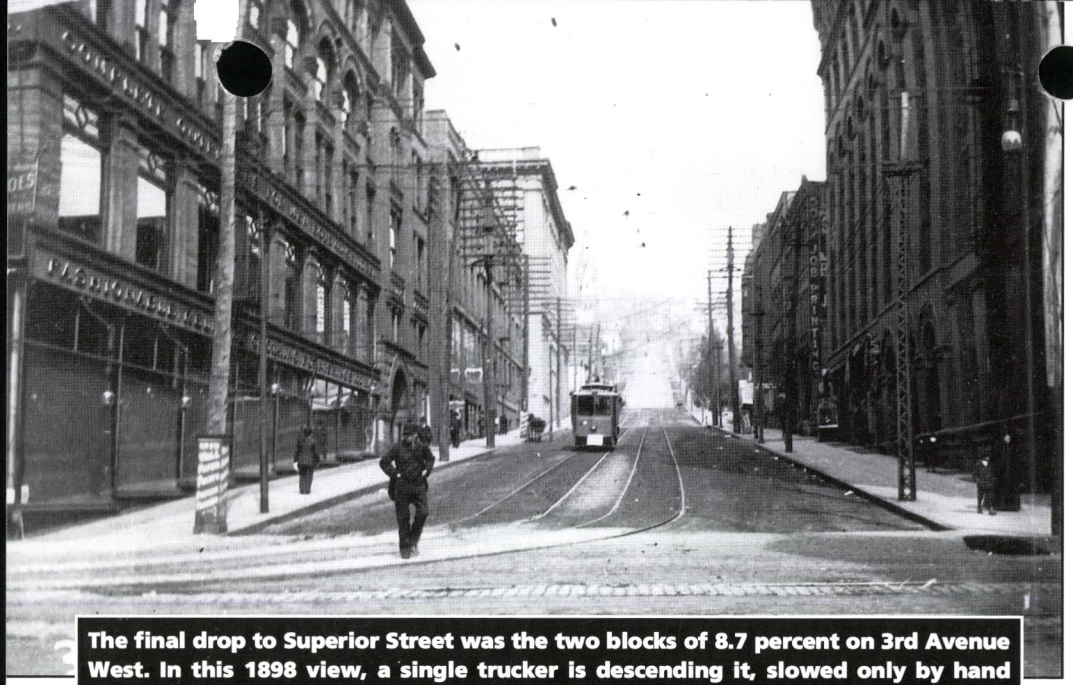
The longer lived, but less severe grades included:

8.7% 3rd Avenue West from Superior Street to 2nd Street

8.6% 5th Avenue East from 4th Street to 5th Street

7.6% Piedmont Avenue from 1st Street to 8th Street

7.1% 6th Avenue East from 5th Street to 7th Street



The final drop to Superior Street was the two blocks of 8.7 percent on 3rd Avenue West. In this 1898 view, a single trucker is descending it, slowed only by hand brakes. Minnesota Historical Society collection.

6.6% 5th Avenue East from 2nd Street to 4th Street

6.5% Kenwood Avenue above 11th Street

6.5% 57th Avenue West from Cody Street to Medina Street

5.7% 7th Avenue East from 7th Street to 11th Street (up to 7.2 percent)

4.7% (portions up to 7.1 percent) 24th Avenue East from Superior Street to 4th Street

The proof of St. Paul's hilliness was the construction of cable lines up the Selby and East 7th Street hills, 16 percent and 5 percent respectively. The Selby Tunnel lowered that grade to 7 percent. There were other significant hills in St. Paul.

6.0% St. Clair Avenue from Pleasant Avenue to Avon Street

4.6% Marshall Avenue from the Lake Street bridge to Cretin Avenue

4.3% State Street from Concord Street to Robert Street

4.2% Jackson Street from University Avenue to Mount Airy Street

4.2% Randolph Avenue from Chatsworth Street to Griggs Street

4.2% Old Concord Street where it diverges from New Concord

4.0% Ford Parkway from the Ford Bridge to Cretin Avenue

Most grades in Minneapolis were short and involved streets with a sawtooth profile. The prime examples are in the vicinity of Minnehaha Creek. The steepest were:

6.0% The 54th Street leg of the 54th and Penn Avenue South wye

5.7% Penn Avenue South from 52nd Street to Minnehaha Creek

5.3% Xerxes Avenue South from 46th Street to 47th Street

4.5% Bryant Avenue South from 49th Street to 50th Street

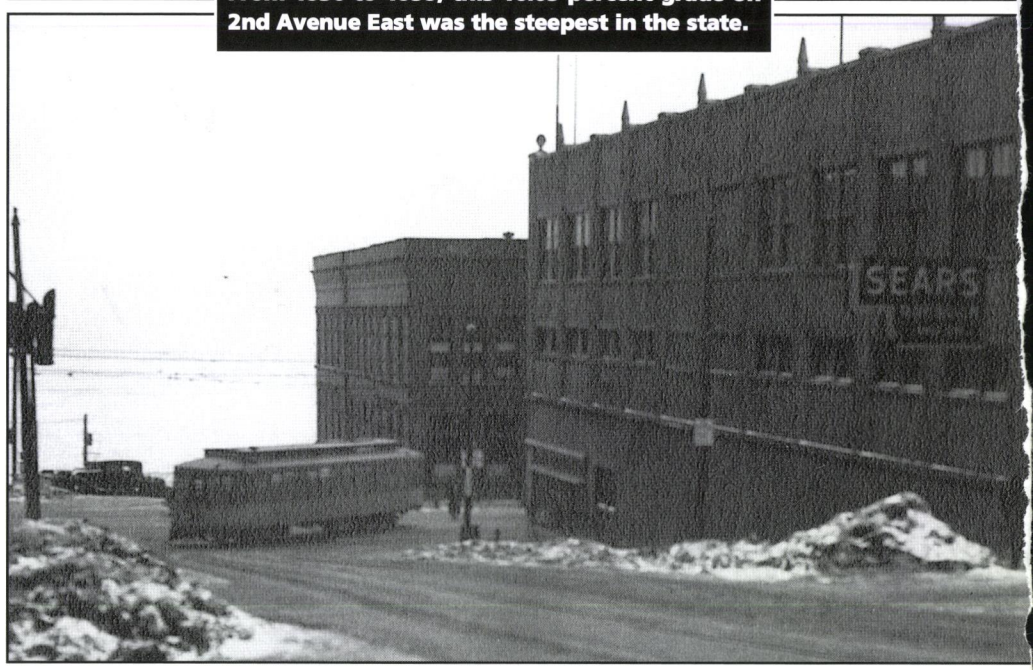
4.4% Nicollet Avenue from 51st Street to the Minnehaha Creek bridge

4.2% Bloomington Avenue from 49th Street to Minnehaha Creek

4.2% 50th Street from Logan Avenue to Newton Avenue

4.0% Nicollet Avenue from 48th Street to 51st Street

4.0% 50th Street from Xerxes Avenue to Vincent Avenue



From 1936 to 1939, this 10.65 percent grade on 2nd Avenue East was the steepest in the state.

The steepest grades in the TCRT system were found in Stillwater. Streetcars left downtown via Chestnut Street on two blocks of 7.5 percent. The interurbans to St. Paul and the Wilkin Street climbed around the north side of town and faced 5.0-6.6 percent on N. 4th Street. The Owen Street and Bayport cars climbed South 3rd Street, a 7.5 percent hill.

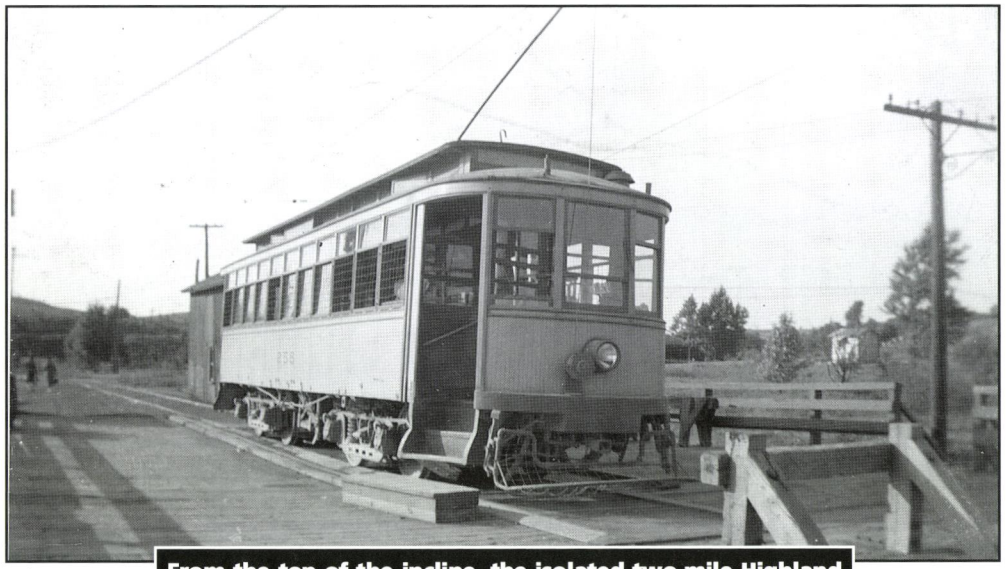
Among the small outstate systems, only Mankato had any hills to speak of. As far as streetcars were concerned, there was only one challenging grade. The aptly named Hill Line climbed away from downtown near the Minnesota River. On Main Street it rose about 35 feet in the block between 4th and 5th Streets, resulting in a brief stretch of almost 9 percent.

downtown, t limbed 620 and 750 feet respectiv . No other elevation changes in the state even came close. Duluth's other significant climbers (which also exceeded anything in Minneapolis and most of St. Paul) included the East 8th Street line at 405 feet, Crosley at 380 feet and Piedmont at 310 feet. Add to that Lester Park at 220 feet, W. 4th Street at 180 feet and West 57th Avenue at 140 feet. The accompanying map shows both vertical rise and steepness of grade.

In the Twin Cities, the Cherokee (Smith Avenue), Stryker and South Robert lines serving St. Paul's hilly West Side were the elevation champs, achieving climbs of 300 feet (Cherokee), 260 feet (Stryker) and 215 feet (South Robert). Lesser St. Paul climbs included 140 feet on Randolph from Chatsworth to Hamline, 140 feet on Ford Parkway and Randolph from the Ford Bridge to Fairview, 135 feet up through the Selby Tunnel, 130 feet up St. Clair from West 7th Street, 120 feet up Grand hill and 120 feet along various streets of the Payne line.

It's no secret that St. Paul is hillier than Minneapolis, where the highest

Piedmont Avenue was a continuous, mile-long 7-8 percent grade that twisted and turned its way down to the lake. It's unclear why workers are moving all that snow by work car. North East Minnesota Historical Society collection.



From the top of the incline, the isolated two-mile Highland line climbed the remaining 120 feet to the summit.

After turning off Superior Street, Woodland cars climbed these four blocks of 24th Avenue East on a 4.7-7.1 percent grade. C. P. Gibson photo, Minnesota Historical Society collection.

A few blocks south of its northern terminal, the Kenwood line drops into the East Branch Creek ravine.

Although the track is on relatively flat East 8th Street at 17th Avenue, the houses dropping away toward the lake accurately depict the steep grades that confronted Kenwood line motormen. North East Minnesota Historical Society collection.

rise on any line was only 90 feet, the Kenwood line ascending Lowry Hill.

Leaving downtown Stillwater, every car faced an uphill haul. The highest was the Wilkin Street local line to the north side of town. It climbed 240 feet, slightly higher than the Owen Street line on the south hill at 230 feet.

Outstate, apart from Duluth, there was only one notable hill. Main Street in Mankato rose about 60 feet.

Steepness

It's one thing to climb a long gradual hill, but quite another if the hill is steep. Steam railroads were generally limited to about 2 percent (two feet of rise per 100 feet of distance) with extremes of 4 percent found on mountain narrow gauge lines. Streetcars, which usually had all axles powered, were able to handle much steeper hills. The steepest modern

Built by DSR in November.

DSR spur track at 37th Ave, W. and Oneota St. It was over this rail siding connection that DSR thereafter received delivery of its cars and other materials. Although DSR referred to it officially as 37th Ave. W. after it became an inservice destination point, it was at that time more commonly referred to as the Elliott Spur because of its proximity to the meat packing plant of that name. A west leg was added in 1906 to provide a wye. In 1911 a 370-foot rail connection was made close by its shops with the Soo Line Rwy. at 27th Ave. W. and Michigan St., following which the NP rail connection was discontinued. The wye itself was removed when Oneota St. was repaved in July 1929.

f. GARFIELD AVE.-SUPERIOR ST.

A wye was installed on the southwest corner of Garfield Ave. and Superior St. on April 27, 1907 to facilitate "pull-outs" and special movements to the GARFIELD AVE. line and to Superior from the West End and from the 26th Ave. W. car house.

g. 2ND AVE. E.

Following abandonment of tracks on Superior St. between 3rd and 24th Avenues E. on July 27, 1934, HUNTERS PARK, WOODLAND and some LESTER PARK-CROSLEY cars were diverted thereafter to the 2nd/4th Streets route. Superior St. merchants east of 3rd Ave. W. complained about the resulting loss of traffic. It was necessary to discontinue all rail service on Superior St. east of Lake Ave. when construction began September 14, 1936 on the 2ND AVE. E. tracks between Superior and 2nd Streets. Trial and familiarization runs began November 8, and on November 12 the tracks were placed in service.

This then became DSR's steepest grade: 10.65 percent between Superior and 1st Streets; 10.17 percent between 1st and 2nd Streets. All cars to and from the east part of the city used these tracks thereafter except KENWOOD cars which continued to use 3rd Ave. W. The tracks were arranged at 2nd Ave. E. and 2nd St. so that a clockwise loop was provided, making possible the much-needed facility for turning eastbound cars that previously wyed at 3rd Ave. E. and at the Canal.

h. MAIN LINE

From an early date and for reasons not known, DSR designated certain tracks as its "main line". Track mileage was originally calibrated from the power house at 11th Ave. W. and Michigan St. However, at a later date, probably when the power house was abandoned as such, 3rd Ave. W. and Superior St. became the base point; the LESTER PARK to NEW DULUTH line was then considered the "main line".

* * * * * * * * * * * * *

INCLINE/DULUTH

2.24 DULUTH BELT LINE RAILWAY (BAY VIEW INCLINE)

Simultaneously--and by coincidence, no doubt--plans for an inclined railway on the West Duluth hillside were being formulated at the same time as those for the 7TH AVE. W. INCLINE and connecting HIGHLAND AVE. street car line (see 2.8).

The motivating force was primarily the same: real estate promoters using this device to promote the sale of lots in a sub-division. The Myers Brothers organized the Duluth Incline Railway on December 12, 1888 to not only provide the necessary access to their Bay View (Heights) Addition development, which they incorporated as the Bay View Land Co. in September 1889, but also, in this instance, to haul timber down the slope to the saw mills along the bay.

The plan originally was to extend the upper end of the line west, through what is now Proctor, to Cloquet to facilitate the movement of timber from that lumber center to the mills on the bay in Duluth, inasmuch as it was impossible to float the logs through the rapids of the St. Louis River.

Built to carry timber, the tracks originally extended east along Polk St. to the saw mills on Grassy Point, this portion of the line east of Grand Ave. being on level ground. It is not known how the cars were propelled on this level portion of track. Operation of about 1 1/2 miles of the lower, flat-land portion of the line began September 8, 1889.

L.24

cables. Telephones were added in June 1902, which provided increases in more safe and ~~more~~ efficient operation. An

A few months after the line began operating, it was reorganized as the Duluth Belt Line Railway (January 16, 1890), and operations, by DBL, began July 8, 1890. The inclined portion of the line was 7,300 feet long, rising 590 feet; steepest grade was 16%. The standard-gauge, single-track, 3-mile-long railway, costing $107,000, began full operation on July 8, 1890. Running time over the entire line, one way, was 24 minutes. Stations were, from the bottom: Iron Bay Works (or Marinette), 4th Ave. (50th Ave. W.), Central Ave. (or Bay View Station), Incline (midway between the SP&D Rwy. on Grand Ave.), Pleasant View, Bay View Heights (Vinland St.). The line followed, more or less Keene Creek, crossing under DSR's tracks on Grand Ave. at 61st Ave. W. Grand Ave. at this point, at that time, was a wooden trestle. Passengers used a wooden stairway between Grand Ave. (above) and the Incline tracks (below) where an ornate waiting station and platform were located.

In August 1890, the Bay View Land Co., in real estate promotion newspaper ads, stated that a 5-year contract had been established with DBL to furnish passengers/freight transportation for not more than 5 cents a person from Central Ave.—the central business district of West Duluth—to "engine house" at Bay View. Eight trips a day were increased to 13 the following year, providing hourly service. Two of these trips were "mixed trains".

Little is known of equipment used in those 26 1/2 years of operation. Nor is much known of the power plant, shops and cables. An undated photo shows a 4-wheel motor car and a small, nondescript passenger car at the hill-top station. DBL bought DSR cars 25 and 28 in 1906, and cars 39 and 41 in May 1915. Motors, controllers and electrical equipment were removed from these cars before going to DBL. Small flat cars and box cars—probably 4-wheelers—were used to handle the company's small freight haulage in "mixed trains".

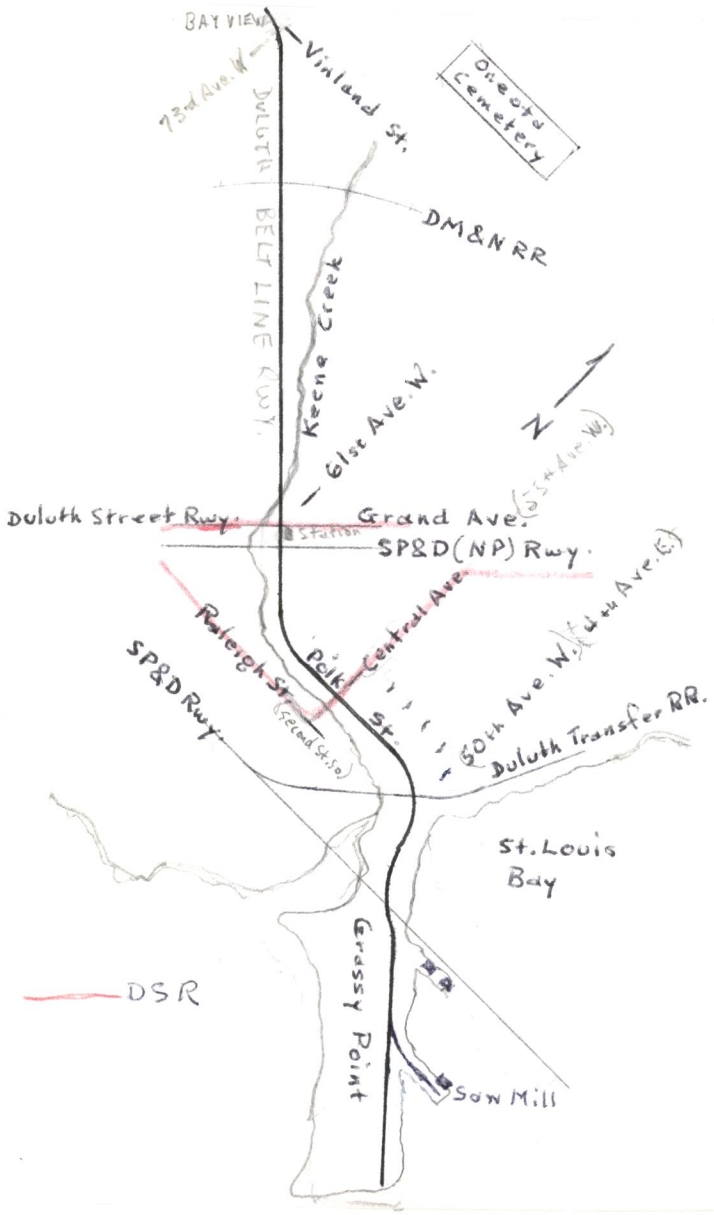
To provide a relatively horizontal plane for the car bodies, the 7TH AVE. W. INCLINE cars—like all incline cars—had an angular under-body truck frame. With its slight grade, DBL apparently reasoned that this device was not necessary on its incline cars.

Apparently the timber-hauling aspects of the line diminished, and by August 21, 1909 the line had been cut back to Grand Ave. Running time then was 7 minutes from Grand Ave. to the top of the hill "...a few hundred feet more than a mile."...actually 1 1/8 miles. In April 1910, major mechanical, power house, cable, roadbed, cars and cosmetic improvements were made.

Although there were no known connections between DBL and DSR--physical, corporate or otherwise--some effort apparently was made for coordinated scheduling; provisions were made in the operation of the incline for the transfer of passengers to and from DSR cars and StP&D trains. DSR showed the connections in its public timetables, showing an hourly service from 6:00 a.m. to 9:00 p.m.

The line shut down during the severe weather of December 1916. It is not known whether it reopened in the Spring. DBL's operation does not show on a DSR September 1916 timetable or thereafter. The entire operation became defunct on December 9, 1917 and was sold for scrap.

One wonders why "Belt Line" was chosen as the name for the reorganized company; no part of it encircled anything in part or otherwise.



Duluth Belt Line Railway Co.

OFFICES: LYCEUM BUILDING

BETWEEN DULUTH, BAY VIEW AND PROCTOR

To Bay View and Proctor		To Duluth	
Leave 3rd Ave. W. via D. S. Ry. Co.	Leave 61st Ave. W. via D. B. L. Ry. Co.	Leave Bay View via D. B. L. Ry. Co.	Leave 61st Ave. W. via D. S. Ry. Co.
A. M.	A. M.	A.M.	A. M.
	*6.00	*6.00	*6.20
6.21	*7.00	*7.00	7.20
7.21	8.00	8.00	8.20
8.21	9.00	9.00	9.20
9.21	10.00	10.00	10.20
10.21	11.00	11.00	11.20
11.21	12.00		
P. M.	P. M.	P. M.	P.M.
12.21	1.00	12.00	12.20
1.21	2.00	1.00	1.20
2.21	3.00	2.00	2.20
3.21	4.00	3.00	3.20
4.21	5.00	4.00	4.20
5.01	5.35	5.00	5.20
6.01	6.35	*5.35	*5.50
6.21	7.00	†6.00	6.20
7.21	8.00	*6.35	6.40
8.21	9.00	†7.00	7.20
		8.00	8.20
		9.00	9.20

* Except Sunday.

† Sunday only.

Take Duluth Street Railway Company's cars signed "E. 4th and W. 3rd to 71st Ave. W." (West Bound) and change to Duluth Belt Line Railway Company's Cars at 61st Avenue West and Grand.

SECTION 3

SECTION 3

RAIL LINES; SUPERIOR, INTERSTATE, MISCELLANEOUS

Unlike Duluth's seemingly simple implementation of its first street car line, Superior passed through a complex, somewhat painful process, brought about by considerable demographic changes, lack of a municipal authority, frequent charter-franchise changes, and inadequate capitalizations to accomplish the job.

3.1 AN EARLY HORSE CAR OPERATION

Although it seems to be generally accepted that Superior's first street cars began operating on December 23, 1889 (see 3.2), a previous less-than-successful operation should not be ignored. The Douglas County Street Railway Co. (DCSR) was organized February 25, 1884 by Gen. J. H. Hammond. An ordinance was adopted on March 29 by the Town Board of Superior, exercising town and village powers, inasmuch as Superior was not yet incorporated. A condition of the grant was that within two years DCSR, "...shall construct and put in operation a line of (street) railway..." "...and granting the company authority to construct and operate a street railway line anywhere in the Town of Superior. The DCSR was incorporated on April 24, 1884 with the following stockholders: J. H. Hammond, W. P. Clough, A. G. Foster, E. W. Winter, (all of St. Paul, Minn.); John C. Spooner (Hudson, Wisc.); Hiram Hayes, James Bardon, George L. Brooks, William J. Conan, and Peter E. Bradshaw (all of Superior). The railway was capitalized at $20,000. A resolution was passed by the Town Board authorizing the location, construction and equipping of this line.

Apparently construction of the line proceeded immediately following incorporation. Hourly horse car operation from 7 a.m. to 6 p.m. began on August 27, 1884 on a single-track, 3'6", narrow gauge line that ran from the horse car barn, stable and courthouse, which at that time were located at 5th St. and Newton (25th Ave. East), west on 5th St. to Thomson Ave. *(23rd Ave. East), north to Bay St. (2nd St.), thence northwesterly to the dock area at or near Winter St., a distance of 2.6 miles. Eight horses and 3 horse cars (see 5.37) had been obtained for this operation, although, for reasons not indicated, only 2 cars were used. For unknown reasons, a less-than-adequate service was provided; four daily trips were operated, with hired passengers, if necessary, supposedly fulfilling the terms of the ordinance.

Then on April 1, 1887, Henry D. Minot of Boston, secured control of the company and began construction of a horse car line that summer. On August 22, the Town Board passed an ordinance stating that the line had been located, constructed and equipped. For how long and to what extent this less-than-satisfactory service operated is not known (see 7.9).

The SUPERIOR CALL of September 25 noted that, "The street car line will be abandoned during the winter, but a stage line will run between East and West Superior." And service was further modified when the village board, by resolution on December 6, approved the operation of sleighs in winter, if necessary, until April 15 (1888), "...for the carriage of passengers, to make not less than four trips daily...from the courthouse...to Tower Ave." "...from December 6, 1887 to April 15, 1888."

The Superior DAILY INTER-OCEAN, on April 14, 1888 reported, "The street car company will at once commence work clearing up and making whatever repairs are necessary to their track. The cars will soon be making regular trips from the courthouse to *Welch's Corner." The feeble operation of eight round trips daily began again on April 26. How long this service continued is not known. The DAILY INTER-OCEAN, on June 7, reported, "The street car tracks at the East End has been torn up to enable the street grading...to be done." However, the situation is confusing; the SATURDAY EVENING CALL, over a year later, on September 7, reported a City Council communication "From the East End Chamber of Commerce asking that the Council order the DCSR to remove their tracks from West Second St. and Bay St."

In any event, there seem to be no accounts of the status of the tracks or what service was provided, alas, if any, from April 1888 until December 1889 when DCSR was refranchised and horse cars began operating again on a modified route (see 3.2).

It was at this time that major events were taking place that would significantly alter the course of Superior's growth. The St. Paul & Duluth Railway (Northern Pacific) built its Grassy Point branch into West Superior from West Duluth in 1887. And in the following year James J. Hill constructed his competitive Eastern Minnesota Railway (Great Northern) into Superior from Hinkley, and with it the vast railroad yards, parallel to Tower Avenue from 28th St. north to the Bay, and providing related facilities for the handling of the rapidly increasing tonnage of grain, timber and general merchandise. In the next five years--1888-1893--following these events, Superior's population jumped from 4,000 to 35,000, a growth that was not surpassed by any city during that period.

General John H. Hammond abandoned a revival of Superior's East End in 1881, and instead, with much financial assistance from James J. Hill, the great "Empire Builder" and from W. R. Fanning, general manager of the Land & River Improvement Co., (LRI), a New Jersey corporation, bast real estate properties were acquired in West Superior. Plats were filed beginning in February 1885. Until about 1896 the village of Superior, that which we now known as East End, was looked upon as the section of Superior to be developed, an area of five residences and commerce close by the harbor along the bay front. But this was not to be, for it is evident from the location of Superior's first street car lines that the demographic move was toward what was then referred to as 'West Superior', a commonly-used term during the 1880s and '90s. It referred, in general terms to that area of the village of Superior's northerly development centered on Tower Ave. as differentiated from what is now Superior's East End, referred to in that era as "Old Superior", "Superior City", "East Superior", "Upper Town" and "Old Town", a term still used by local railroads.

Lacking power to do so, the village had not yet platted the addition of West Superior through which much of the tracks were projected. On November 17, 1884, on March 24, 1885 and again on March 10, 1886, the LRI, being the owner in fee simple of certain pieces of land prior to platting the same into an addition to the city of Superior, granted to the DCSR a perpetual easement and right-of-way, "...on, to, upon, over, and along a space of ten feet on each side of the center line of certain specified streets." When the land was subsequently platted, the recorded plat confirmed the permanent easements and rights-of-way theretofore granted. The generous and seemingly limitless granting of this 20-foot strip of land for street railway use was exceedingly advantageous for DCSR and most unusual in street railway annuls. In later years, however, this was to become a controversial matter, inasmuch as it was difficult for rate-making bodies, in particular, to establish a value on this form of land use.

3.2 A HORSE CAR FRANCHISE

Superior was incorporated as a city in March 1889, and on July 9 the Council adopted and approved an ordinance which required some changes in the original tracks, and construction of about five additional miles of track before the end of the year. Ratified four days later, it granted DCSR a 30-year franchise, "...to maintain and operate a system of street railways..." Officers and directors of the company at this time were: Henry D. Minot (President), John a Bardon (Secretary), C. W. Bunn, Frank E. Ward and Peter E. Bradshaw; S. T. Norvell was Superintendent. The routes required by the ordinance were as follows:

The first of these was a single-track 3'6" narrow-gauge horse car line starting at 5th St. and Newton (25th Ave. E)--same as the several previous operations--, along 5th St., L Ave., 7th St., and on Belknap St. to Tower Ave.; and on Tower Ave., from 3rd to 21st Streets. Operations began on December 23, 1889, with media

* Where was Welch's Corner? Superior Public Library's head librarian, Barry Singer, searched diligently the records of that era, but the location of the then probably-well-known-landmark seems to remain a mystery.

An Ordinance, approved July 9, 1849, and a new franchise, dated July 13, reaffirmed the same rights and limitations as specified on March 29, 1884 (above). DCSR

and trial/training runs the previous day. For a description of construction and operation see 3.9. Base of operations was an office and stables at 25th Ave. E. and 5th St. where a Northern Pacific Railway depot later occupied the site. Only two blocks of the former franchise route were utilized by this later operation. The balance was abandoned. Four horse cars (see 5.37) and eight horses were available for this operation. Offices were in the First National Bank Building.

Additionally, the franchise required the construction of the following horse car lines:

To be completed after 1889 as soon as streets were in suitable condition: a loop line from Belknap St. and Catlin Ave. on Catlin Ave. to Broadway, and on Broadway (or Winter St.) to Tower Ave.

To be completed after May 15, 1890, as soon as streets were in suitable condition: on 3rd St. from Tower Ave. to Lamborn Ave.

For a description of the construction and operation of the two lines above, see 3.4.

Seemingly sub-standard methods were utilized in the construction of these early horse car tracks in Superior. A pair of 2" x 12" planks were laid laterally in Superior's unstable clay soil. 8" pine ties were placed directly on the planks. 35 lb. T rail was then spiked to the ties. If not originally, then quite soon thereafter, cedar blocks were used in the paving of the streets. Its flat topography provided poor drainage, resulting in a constant and expensive source of trouble. At its maximum in 1898, there were 22 miles of this type track in Superior.

~~With a new franchise, dated July 13, 1889,~~ DCSR horse cars began operating on December 23, and ceased operating on July 1, 1890...less than 7 months of horse car operation.

3.3 ELECTRIFICATION

On March 4, 1890, an amendment to the Articles of Incorporation was filed by DCSR, providing for an increase in the capitol stock on March 17 to $50,000, primarily to finance the planned electrification. 4 1/2 miles of trolley wire had been obtained from N W Thomson Houston Electric Co. in February. Erection of trolley poles and trolley wire by NWTHE were well underway on March 21...major steps toward electrification of the horse car lines. In contrast to the slow, painful process of getting its first horse car lines in operation, the conversion to electric car operation was accomplished quickly and with few apparent difficulties. Electric power was supplied by Superior Water, Light & Power Co. The EVENING CALL of November 23, 1889 reported, "The electric street railway is stringing its wires on Tower Avenue today." Electrification of the initial two lines was in the early planning stages while the horse car lines were still under construction. Superior Water, Light & Power Co. furnished the electric power.

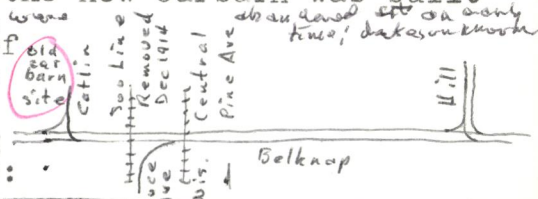
Trial runs of the electric cars began on June 27 (1890); revenue operations began on Tuesday, July 1 on approximately 3 miles of fragile strap rail, single horse car tracks. This was increased to 5.43 miles of line, 6 miles of track by the end of the year in this timely upgrading, utilizing 35 lb. T rail.

DCSR did this while DSR across the Bay was wrangling with the city about franchise provisions related to this new mode of travel. Duluth's electric cars began operating four months later. Not to belittle Superior's accomplishments, electrification in Superior, however, was considerably simplified when it is realized that DSR was involved in the additional process of converting its narrow-gauge tracks to standard gauge, simultaneous with electrification in 1890. DCSR, however, unlike DSR, took the seldom-used device of retaining the narrow-gauge tracks. This, of course, simplified matters considerably, was less costly, and caused little or no interruption of service during the conversion; horse cars and electric cars could be operated simultaneously on the same track.

Superior's conversion to standard gauge was not to be accomplished totally until July 1902 (see 3.9).

It is interesting to note here that DCSR utilized yet another device which, only temporarily, however, saved time and costs in the initial conversion process. The Daft system of electrification was adopted in the planning and early electric street car operation in Superior, in which two trolley wires were utilized. Although it was one of several systems used in the very early stages of street railway electrification, it proved cumbersome and troublesome, and frequently

38 A frame carbarn and shops were located at Belknap and Catlin, probably built there immediately following the acquisit of the DCSR by the SRT in 1892. There brief remarks in the records of anot (brick)barn at 28th St.and Tower Ave., t nothing is known of its nature, use or disposition. Prior to the corporate change in 1892, the DCSR had used a barn and office located at 25th Ave.E. and 5th St. on what was later to become the site of the NP station(see note f). All of these facilities were abandoned in- or had been abandoned by- 1902 when the new carbarn was built at 4th and Ogden, 1892 All of these facilities were Ave.E.and 5th St.on what was to become later the site of the NP station(see note f). All of these facilities were abandoned in--or had been abandoned by- 1902 when the new carbarn was built at 4th and Ogden, there remaining only a wye track at Belknap and Catlin after 1903, thus:



** DC&R. A unique land grant was conveyed to the River Improvement Co. when given a perpetual right-of-way of 10' on both sides of the center lines of all single- and double-track lines in West Superior. This created tax litigations at later days.

required a third crew member to attend to the trolley. In Superior's situation, the two trolley wires may have seemed the better (easier?) way to go: DCSR had opted to run the electric cars on the same flimsy rails that had been used by the horse cars (see 3.17). As elsewhere, the use of this system was brief in Superior, and a conversion was made to the Thomson-Houston system of one trolley wire and bonded/grounded return-circuit rails.

There are some events of this period which seem not to be recorded, and this leaves some questions unanswered. Most significant of these was the extent of the initial electrification. However, it seems quite probable, and reasonable to assume, that the first electric lines were a conversion of the existing single-track horse car lines: Tower Ave. and Belknap-East End.

Terms of the July 1889 ordinance also provided that DCSR, "...after...1889, as soon as the condition of the streets shall render the construction...reasonably practicable, a line from...Belknap St. and Catlin Ave. (along) Catlin Ave. and Broadway (or Winter St.) to...Tower Ave..." Provisions of this ordinance were not fully implemented, for when the single-track line on Broadway St. began operating on February 1, 1891, it extended .64 miles from Tower Ave. to Clough Ave. only. Laying of the tracks had begun November 3 of the previous year.

By now there were 6.02 miles of electric street railway tracks in Superior. Most, if not all, of this was single track. There is no record of necessary passing tracks.

Double-tracking of the Belknap Street tracks began in August 1891, and became operational on November 6.

The street railway operations had so effectively changed the riding habits in Superior that all "short line" steam train service in Superior was discontinued by the railroads on June 1. (See also 3.14).

DCSR extended its electrification considerably in the two years following the initial conversion. Perhaps this was aided by an act of the Wisconsin legislature approved March 31, 1891 which ratified, confirmed and validated the rights previously granted by the city of Superior to DCSR.

On January 9, 1892 the capital stock of DCSR was increased to $150,000.

There are incomplete records of dates, but in the two years following electrification there were some major track extensions. By August 13, 1892 (when mortgage papers were recorded prior to Superior Rapid Transit Railway (SRTR) acquisition of the properties), this was the extent of the electrified rail lines:

Double track on Tower Ave. from 3rd to 28th Sts.

Double track on Belknap St. from Tower Ave. east to 7th St., on 7th St., L(6th) Ave., and on 5th St. to Newton (25th Ave. E.).

Single track on 21st St.—known then also as Ritchie Ave.—from Tower Ave. to New York Ave.

Single track on 3rd St. from Tower Ave. to Lamborn Ave.

Single track on Broadway St. from Tower Ave. to Clough Ave.

This constituted approximately 13.7 miles of track.

The SOUTH SUPERIOR line was in the final states of construction (see 3.11).

3.4 3RD ST. ~~AND BROADWAY ST.~~ LAMBORN AVE.

Terms of the July 1889 ordinance provided that DCSR, "...shall next year, that is after May 15, 1890, extend its line...from Tower Ave. along 3rd St. to Lamborn Ave..." The .5 mile single-track line went into service on January 1, 1891. Some accounts give December 8 of the previous year.

By mid-1893, it was converted to double-track, and the double-track was extended north on Lamborn Ave., along Bridge St., across the new Lamborn Ave. draw bridge, and along Main St. to the tip of Connor's Point. (See 3.10).

The Lamborn Ave. draw bridge, built in 1891, (see 7.8), crossed the 264-foot-wide ship channel referred to as Howard's Pocket.

3.5 ACQUISITION BY SUPERIOR RAPID TRANSIT RAILWAY CO.

The Superior Rapid Transit Ry. Co. (SRTR) was incorporated in August, 1892, by Samuel Barnes (President), Frederick W. Hanson (Secretary), and William Neville. They offered to purchase DCSR for 9987 shares of fully paid capital stock of SRTR plus $450,000 in bonds secured by a mortgage with Central Trust Co. of New York as trustee. The offer was accepted on August 12 by DCSR and on September 10, 1892 SRTR succeeded to the rights and properties of DCSR. Officers and directors of SRTR were: Stephen T. Norvell (President and General Manager), Frederick W. Hanson (Secretary and Treasurer), James Bardon, (all of Superior) and Charles Fairchild (of Boston).

Under the new management of SRTR, several more extensions came about quickly. These were probably accomplished in the fall of 1892 or early summer of 1893, inasmuch as most construction ceased in both Superior and Duluth as the economic effects of the Panic of 1893 began to be felt in mid 1893:

Double track replaced the single track on 3rd St., Tower Ave. to Lamborn Ave.

A double track line was built on 6th St. from Tower Ave. to Lamborn Ave., along Lamborn and Bridge St. and across the new Lamborn Ave. bridge, thence along Main St. to the tip of Connor's Point. (See 3.10).

The EAST END line was extended single track along 5th St. from Newton (25th Ave.) to Robertson (31st Ave. E.) referred to at that time as the Nemadji line.

The BROADWAY line was converted to double track and extended to Catlin Ave. and south on Catlin to Belknap St.

The 21ST ST. (Steel Plant) line was double-tracked to Wyoming Ave.

The SOUTH SUPERIOR line was completed, double track to Central Ave. (61st St.), then single track to 64th St. Some accounts show 63rd St. Services began September 14, 1892. In the following year, a single track branch line was built on Central Ave. east from Tower Ave. to near John Ave.

At this point in time there were 26.0 miles of track in Superior, most of the lines being double track.

To finance this additional construction, $200,000 in second mortgage bonds were issued July 3, 1894, again with the Central Trust Co. of New York as trustee.

This then describes briefly the rapid extension of street railway lines in Superior in the short interval of time--1890-1893. Each of these lines is described in greater detail in paragraphs 3.8 through 3.15 that follow.

Additional street cars were urgently needed to serve this rapidly expanding network of tracks. See 5.29a for a listing of car purchases during that time.

As in Duluth, there had been major rail extensions in the boom years 1890-93. But, except for conversion of the INTERSTATE line to standard gauge in 1898-99, there were no track changes in Superior during the post 1893 economic recession--or until 1901.

3.6a. DEFAULT, RECEIVERSHIP, FORECLOSURE, ACQUISITION BY DULUTH STREET RAILWAY

SRTR defaulted in payment of interest on the second mortgage bonds and was placed in receivership January 28, 1896; S.T. Norvell and Frank W. Oakley were appointed Receivers.

The foreclosure sale was held on June 16, 1900; the property was purchased for $350,000 by Marcus D. Munn (Twin City Rapid Transit Co.'s legal counsel) acting as agent for the second mortgage bond holders. Directors of SRTR subsequently elected were: S.T. Norvell, Thomas Lowry, G.G. Hartley and Luther Mendenhall.

Control finally passed to the Duluth-Superior Traction Co. (DST), a holding company. On August 14, 1900, all property then became and was thereafter the Superior Division of the Duluth Street Railway (DSR), DST's operating subsidiary.

At the time of the merger, there were 26.5 miles of track in Superior.

With the aid of a study and recommendations by the consulting engineer firm of Ford, Bacon and Davis, DSR set about on an extensive rehabilitation of the Superior property. The report, submitted March 20, 1900, disclosed among other things that no reserve had been kept for depreciation during the recent period, that most of the track--22.5 miles—was very lightweight 3 1/2" 35 lb T rail, and that the property, particularly the tracks, had deteriorated to a 50% condition, and, "...should be immediately replaced with first-class construction..." An exception was made of the STEEL PLANT-21ST. ST and the SOUTH SUPERIOR lines where the traffic was light. It became painfully obvious that the rail system had been overbuilt in excess of the demographic and economic base.

DSR went before the Superior City Council on August 16, 1901, negotiated a new franchise, effective the following day, and, in reviewing the deplorable condition of the street railway system, received Council approval to make specific reductions of track--some work already begun--in 1901-02.

b. These must have been difficult days for DSR and the city. The BROADWAY line, for instance, which had been entirely rebuilt in 1901, was abandoned the following year.

The following reductions were made in 1901-1904, reducing the Superior trackage from 26.5 to 21.55 miles. Wisconsin Railroad Commission and DSR accounts vary, with reductions of 7.65 miles and 5.99 miles respectively being recorded. Interpretation of the interim status of the EAST END line from 25th Street to 31st Aves. E. probably accounts for the discrepancy (See below).

Precise dates of these changes seem not to be recorded. However, a DSR diagram and explanation of track changes, and expenditures of funds in Superior (and Duluth) dated December 8, 1904, indicates the year of change, shown here in parenthesis:

The BROADWAY-CATLIN line was abandoned ("torn up later after 1901").

The SOUTH SUPERIOR line was reduced to single track, Belknap to 61st St. (1901-02).

The 61ST ST. (Central Ave.) branch of the SOUTH SUPERIOR line was abandoned (1902).

The 21ST ST. (Steel Plant) line was reduced to single track (1902).

The 6TH ST. line was reduced to single track (1901).

That portion of the EAST END line on 5th St. between 24th and 31st Aves. E. and on 31st Ave. to 4th St. was retained on a standby status after 1900; scheduled service was not operated over it, it being used for picnic and other special movements only. The trolley wire over abandoned tracks was not removed, it being left in place as feeder wires.

The Council's mood seems to have changed, however, as the difficult truncating process became a painful reality, so much so that Council, November 17, 1903, appealed to the state courts to nullify the 30-year franchise obtained by DSR in 1901. However, there seems to have been no extended litigation.

3.7 CONVERSION TO STANDARD GAUGE AND REHABILITATION

Although some lines had been abandoned or reduced following the merger, and although these changes produced a contentious mood, there were other changes of a happier nature. On September 22, 1901 DSR advertised for 200 trackmen (laborers) to begin upgrading some tracks in Superior. The first of these was the conversion of the EAST END line to standard gauge (see 3.8). The franchise of August 17, 1901, ordered a standard-gauge, single track before the year was over, "...using not less than 75-pound rails...", and double track before November 1 of the following year (1902). This was not the first line, however, to be converted to standard gauge in Superior; the INTERSTATE line (Connor's Point, 3rd Street, and Tower Avenue to Belknap) had been converted two years earlier, (see 3.10).

During the conversion, 4050 feet of three-rail (dual gauge) track was installed on Belknap St. And track-work at the Catlin Ave. car house was altered to accommodate the dual gauge operations. Wyes were installed at Tower Ave./Belknap St. and at Main St./Lamborn Ave. on June 20, 1901.

During the four years following the merger, DSR spent approximately $374,000 in "betterments" on the Superior property--$193,000 on tracks alone, even though the August ordinance provided that DSR, "...shall not be required to extend any of its present lines or construct any...additional lines for a period of five years...except the ITASCA and 21ST Street line extensions." (The ITASCA (ALLOUEZ) line was not built until 1907. Plans for the 21ST ST. line agonized through years of litigation, and was not built until January 1, 1922--20 years later.)

It was during this time, also (1902), that a new car house, shops, yards and loop track were built at 4th & Ogden, replacing the inadequate facilities at Belknap St. and Catlin Ave., where all tracks were abandoned and removed.

Interstate Traction Co.'s Park Point line had dual-gauge operation for a short period of time--December 1989 to January 1900--during it's conversion from narrow to standard-gauge track (see 2.21).

3.8 EAST END

Superior's EAST END line to 24th Ave. E. (Stinson Ave.) was 3.95 miles of narrow-gauge double-track prior to the 1900 merger. In the large-scale improvement program launched immediately thereafter, this line was converted to standard-gauge (4' 8 1/2") T rail single track to 25th Ave. E. - except for two blocks of double track on 6th Ave. (L Ave.). 5 sidings, special work and turn-outs were installed, temporarily, in the complex conversion of this line. All of this was necessary to maintain service on the line during the period of construction, which was finished October 5, 1901.

In the following year, plans were finalized, and the Superior Common Council, by resolution on February 14, 1902, directed DSR to extend the line. In that year, the line was again double-tracked with 70 lb rail to 25th Ave. E. In that year, the line was again double-tracked, and extended single track across the Northern Pacific tracks to Robertson Ave. (31st Ave. E.), and on 31st Ave. E. to 4th St. and a wye in October 1903, thus satisfying an August 17, 1901 Council order (see also 3.13).

In June 1917, the remaining portion of single track between 26th and 31st Aves. E. were upgraded to double track. A loop was installed at Stinson Ave. (24th Ave. E.) in May 1925.

Street repaving projects forced the abandonment of most remaining trackage in Superior on June 5, 1935. The EAST END line--that portion only from Tower Ave. to the 31st Ave. E. wye--however, continued as a rail operation until June 23, the final day of rail operation in Superior.

The Soo Line crossing at Spruce Ave. was removed on December 17, 1914. A 500-foot spur was built south from Belknap St. adjacent to the Soo Line track on March 17, 1911, primarily for the receipt of rail, ties and other materials; removed in December 1931.

3.9 TOWER AVENUE

The franchise provisions of July 9, 1889 required DCSR to build--in addition to the BELKNAP-EAST END line--a narrow-gauge horse car line on Tower Ave. from 3rd to 21st Streets. This was accomplished in late 1889, and the line was electrified on July 1, 1890. A year later, in May 1891, the electric cars were running on double track from 3rd St. to Belknap. In August 1892, the double track was extended south to 28th St.

In the process of converting the Superior tracks to standard gauge from narrow gauge, the first of these to be converted were the tracks on Tower Ave. from 3rd to 21st Sts. in 1897-99, with dual-gauge operation from Belknap to 21st Sts.

Tracks south of Belknap changed with the economic tides. These were an early victim of the retrenchment program when they were reduced to single track--west side of the street--in late 1900 from 21st Street to South Superior. Wyes were installed at Belknap and 21st Sts. the following Spring (of 1901) to facilitate turning the large double-truck cars that went into service on the INTERSTATE line on June 1.

The single-track BILLINGS PARK and SOUTH SUPERIOR lines were the last to be converted to standard gauge in Superior--July 8, 1902--three years after the first conversion--the INTERSTATE line--was completed

xxx maintained a 25'x60' platform and a 20'x40' waiting station for the shelter and comfort of its Interstate passengers. at its Connor's Point ferry dock. The Superior INLAND OCEAN newspaper of June 11, 1893 reported, "The Street Car Company has completed the transfer dock at Connor's Point."

~~2,12. During those years of~~
~~xxx difficult crossings, SRTR, for the comfort and convenience of its passengers, provided a 25'x60' platform and a 20'x40' waiting station.~~

March 28,1899. A year later, in 1903, the second track was added between Belknap and 21st Sts. using 7" 70 lb rail. The tracks then appeared thus:

The final change occurred when the second track was extended from 21st to 28th Sts. on June 1, 1910.

The tracks south of 21st St.--the SOUTH SUPERIOR line--were abandoned June 25, 1931.

The tracks on Tower Ave. between 3rd and 21st Sts. were abandoned when service on the INTERSTATE line ceased June 5, 1935.

In conjunction with the new carhouse track on 4th St., built in December 1902, (see 7.9) access tracks were also built the same year between 4th and Tower and 3rd and Ogden; these were utilized, also, as a north-end terminal for turning cars of several lines. These also were abandoned on June 5, 1935, and the carhouse converted to a bus garage.

3.10 ~~DULUTH-SUPERIOR (INTERSTATE~~ 3RD ST.--CONNOR'S POINT)

Many and varied were the early modes and devices of travel across the bay between Superior and Duluth before the building of the Interstate Bridge in March 1899. Most were inconvenient, temporary and prone to interruptions.

For a description of these crossings, see 2.12.

A year after the TOWER AVE. tracks reached 3rd St., the push, logically, was to extend those tracks east and north to the goal: the tip of Connor's Point and, eventually, to a rail connection with DSR.

The 3RD ST. line was built single track east from Tower Ave. to Lamborn Ave. with operation beginning on January 1, 1891 (see 3.4). By mid-1893 it was converted to double track, and the double track was extended north on Lamborn Ave., along Bridge St., across the new Lamborn Ave. bridge, and along Main St. to the tip of Connor's Point, where, for many years, SRTR maintained ~~a platform ferry dock and waiting room.~~ The Lamborn Ave. draw-bridge, built in 1891 (see ~~7.8b~~ 7.9), crossed the 264-foot-wide ship channel referred to as Howard's Pocket.

For the planning, construction and operation of the DULUTH-SUPERIOR (INTERSTATE) BRIDGE, see ~~2.12b~~. 7.7.

Double tracks on the newly-built Interstate Bridge provided the much-desired connection between Connor's Point (Superior) and Rice's Point/Garfield Ave. (Duluth). Rail service began September 1, 1897. Development of this Interstate operation brought about a rapidly increasing volume of passenger traffic. And with the extra fare collected from interstate passengers, this was quite probably a highly profitable line for DSR. No doubt SRTR wanted to get its share of this lucrative business, but differences of track gauge were a block to any compatible coordination. Tracks of SRTR at this time were narrow gauge, while those of DSR were standard gauge. Cars of DSR crossed the bridge, transferred passengers with SRTR on the Superior side of the bridge, turned, and returned to Duluth.

The solution, of course, was for SRTR to standard gauge its INTERSTATE (CONNOR'S POINT) line. SRTR announced that it would do so immediately. The SUPERIOR EVENING TELEGRAPH of October 19, 1897 reported, "The proposed improvements will mean the putting in of a standard gauge double track in place of the narrow gauge (tracks) over the entire system. The first move, however, will be made on the Interstate line, starting at the corner of Belknap (and Tower Ave.) and connecting with the Duluth line at the Duluth-Superior Bridge." However, the HERALD of November 18 reported, "The SRTR has...decided not to proceed with the work of laying a standard-gauge track on Tower Avenue line this fall, owing to the lateness of the season...The material will be delivered within a short time...April 1st is the time set for the work to begin, and the Interstate line between Belknap Street and the Duluth-Superior Bridge is the one on which the first improvements will be made. These improvements will include a new standard gauge track laid with 80 pound steel." (74 pound rail was actually laid).

SRTR (which was then in receivership) probably struggled along all of that next summer (1898) on this project. The DULUTH HERALD of September 20 stated, "According to plans of the SRTR Co., the new wide (standard) gauge tracks running from the Interstate bridge to 21st Street in Superior will be completed inside of 30 days. 150 men are now at work laying rail...on 3rd St...The tracks are to run across the Lamborn Ave. bridge...When the new track is laid...cars are to run

interchangeably between Duluth and Superior without transfer at the bridge." (See also 3.7).

The tracks, unfortunately, were not completed in 30 days; in fact they were not completed that year. Standard-gauge cars began operating September 20, 1898, however, on the portions of the line as construction progressed. Finally the project was completed the following spring, and, on March 28, 1899, the first through service between Duluth and Superior began, a joint arrangement between the two companies. An equal number of cars were furnished by each company.

These first standard gauge tracks in Superior extended double track south from the Interstate Bridge, along Main St., the Lamborn Ave. Bridge, Bridge St., Lamborn Ave., 3rd St., south on Tower Ave. to Belknap, then single track to 21st St., a total of only 4 miles. All other trackage in Superior at this time (22.5) miles) was still narrow gauge, except that there were dual-gauge tracks on Tower Ave., Belknap to 21st Sts., and on Belknap St. from Tower Ave. 4050 feet to the car house at Catlin Ave. in 1901.

Frequent and prolonged delays that resulted from the openings of the two bridges prompted the building of a wye at Bridge and Main Sts. on Connor's Point which went into service on June 20, 1901, and which facilitated the turning back of cars going in either direction at times of extended delays at either bridge, thus:

The wye was relocated to the south end of the INTERSTATE Bridge on October 23, 1918 after the great fire of October 12 destroyed the Duluth approach to the Bridge, temporarily stopping operation across the Bridge (see also 2.12)

Industry, primarily the Peyton, Kimball & Barber (PK&B) lumber mill, were served by a spur track across Main Street from the CSTPM&O-NP tracks on the east side of the Point. The spur and crossing were removed in December 1908 when the Soo Line tracks were laid on the west side of Main St.

Roy McIntyre was operator of the last INTERSTATE car to leave Superior, at 1:30 a.m. June 6 for Duluth, thus ending DSB operation. 1935

3.11 SOUTH SUPERIOR

The Superior Land Co. was incorporated November 14, 1889, and began immediately an energetic promotion of residential development in South Superior. The South Superior Improvement Co. incorporated on November 8, began a simultaneous promotion of commercial and industrial properties.

On October 12, 1890 DCSR President H. D. Minot announced that a street car line would be built to South Superior as soon as land for a public right-of-way along Tower Ave. could be freed from litigation.

The electric street railway to South Superior was to be more than the relatively normal extension of local lines (such as the 3RD ST. or BROADWAY lines) or an extension to the suburbs (such as BILLINGS PARK). It did more nearly fit the definition of an interurban line, that of linking two urban areas.

Although optimism seemed to be one of the chief ingredients in the building of most street railways of that era, this, among all the street railway developments in Superior, seems, in retrospect, to have been least likely to succeed. But succeed it did, in spite of limited potential traffic and the fact that the line passed through a largely undeveloped, uninhabited area from the DSS&A railroad tracks near 28th St. to 52nd St.

Apparently construction did not begin until summer 1892, and was completed in the final days of DCSR control of the Superior properties. On September 14, 1892, four days after corporate control passed to SRTR (see 1.16), the double track line opened to 61st St. (Central Ave.) with a great accompanying celebration which acclaimed the importance of this fine 3 1/4 mile line.

Building of the level, straight-as-an-arrow SOUTH SUPERIOR line produced the longest tangent track in Superior/Duluth: 4.28 miles of straight double track on Tower Ave. from 3rd to 61st Sts.

Early the following year (1893) the line was extended single track across the Northern Pacific Rwy. tracks to 63rd St.

At some time not known between September 1892 and early 1893, a single-track branch line was built east on Central Avenue (61st St.) from Tower Ave. across the NP railroad tracks to "near Hughitt School House" located midway between John and

Hughitt Aves. There seems to be little logic for building this short--755 foot, .15 mile--line.

The line was abandoned in 1902.

The SOUTH SUPERIOR line was the first victim of the harsh retrenchments following the 1900 merger. During 1901 it was reduced from double to single track south of Belknap St., with a 590-foot passing track installed at 2000 feet south of 28th St. and another of 310 feet at 6000 feet. 2.6 miles of track were taken up.

The area along Tower Ave. between 28th and 52nd Sts. was not platted in that early era of Superior's development. Without the conventional reference to street numbers/names, DCSR used, instead, the rather unusual device of referring to specific points at a given number of feet along its line south of 28th St.

The third rail on this line was removed on July 8, 1902, it being converted from narrow gauge to standard gauge at this time. This ended narrow gauge/dual gauge operations, it being the last in Superior to be converted. It had taken two years to make the change. And this brought an end to the operation of narrow gauge cars in Superior. 11 narrow gauge cars had been retained for this service. In a compromise with city officials, DSR was permitted to retain the light 35 lb narrow gauge rail for the conversion.

The line was cut back to 61st St. at the time of the conversion inasmuch as the rebuilding of DSR's tracks across the Northern Pacific's tracks had not been completed. With completion of the crossing in December, the line was again extended, single track, from 61st to 63rd Sts., and at which time a wye was built at 63rd St.

Double track was restored from Belknap to 21st Sts. in 1903, and from 21st to 28th Sts. in June 1910, at which time the sidings at 2000 and 6000 feet were removed.

When the entire line was upgraded with heavier rail in summer 1911, the sidings at 32-33rd and 22-23rd Sts. were removed, and a siding was installed at 7950 feet:

A fair grounds track complex of 950 feet was developed in June 1916 when the siding at 7950 feet (46th St.) was extended and a loop was added:

To facilitate handling the heavy passenger traffic to and from the fair grounds, the 500-foot siding at 2000 feet (35th-37th Sts.) was reinstalled July 8, 1920. In the same year a siding was added at 57th-58th Sts.

The south leg of the 63rd St. wye was extended to 64th St. on May 21, 1903. The 63rd St. wye, installed in 1906, was replaced by a loop in 1925.

DSR petitioned the Wisconsin Railroad Commission in August 1929 for permission to abandon the tracks over and south of the Northern Pacific Rwy. crossing (61st to 64th Sts.). Maintenance of the 3-track railroad crossing was costly, and the movement of trains was hazardous and caused delays. The appeal was not favorably considered.

The SOUTH SUPERIOR tracks crossed the Duluth South Shore & Atlantic Railroad single track at grade at 180 feet south of 28th St. The crossing was removed October 24, 1931, after the DSS&A had abandoned its tracks the previous year.

Although the SOUTH SUPERIOR rail line was abandoned on June 25, 1931, it was necessary to reopen it temporarily to 48th St. for six days (September 6-11) for fair grounds operation, inasmuch as there were not sufficient buses available to handle the fair grounds crowds at that time. (See 3.24c).

3.12 BILLINGS PARK (21ST ST., STEEL PLANT)

Originally referred to as the "21st Street line", it was more generally referred to as the "Steel Plant line" because of the proximity of the West Superior Iron & Steel Co. plant. However, when DSR was granted an easement by the Billings estate in February 1903 to extend its tracks into the park, DSR and the City mutually agreed at that time to drop these designations in favor of the more appropriate "Billings Park", named for Frederick W. Billings, president of the Northern Pacific Rwy. from 1879 to 1881.

The line was built as a single-track narrow-gauge line to New York Ave. in the expansion of street car lines in 1890-92, immediately following the original electrification. In late 1892 or early 1893 the line was converted to double track from Scranton to New York Aves. With a single-track timber viaduct over the BN Rwy. tracks. During the retrenchment program following the 1900 merger, the line was reduced again to single track from Wyoming to New York Aves.

By order of Council, approved August 17, 1901, DSR was ordered to upgrade the line, "...so as to make a substantial track... same to be completed November 1, 1902." The single-track line was converted to standard gauge at the same time.

The Billings estate granted DSR a forty-foot-easement adjacent to the south side of 21st St. west of New York Ave. on June 26, 1902, following which the tracks were laid on this private right-of-way, and extended to the gates of the Gitchinadji Town & Country Club. A loop and siding were added when the estate provided an additional 2.4 acres in October 1903. The siding was removed the following year.

B.J. Van Vleck, a controversial chairman of the Superior Commercial club, offered free right-of-way to the "Steel Plant" in December 1910. DSR backed away from this offer when it was realized that strings were attached, this actually was an effort to promote his real estate interests.

On November 22, 1910, along with the Wisconsin Railroad Commission, DSR entered into an agreement with the Soo Line Railroad for the construction of its "ore dock line" over 21st St. at New York Ave., which entailed changes to DSR tracks at this point. The trestle was replaced by a fill, abutments and a short span in June 1921. The span was removed after the ore dock and approach tracks were abandoned by the Soo Line in 1931.

Double track was reestablished on most of the line in November 1912.

In response to a June 21, 1916 WRC order to put the large double-truck cars on the line, DSR argued that the 21st St. viaduct was not substantial enough to sustain the weight of these heavier cars. The city responded by strengthening the viaduct, and the large cars went into service on this line on July 27.

The crossing of several ~~Soo Line~~ and NP tracks at grade constituted a great hazard on this line. Following a tragic grade crossing accident in January 1927, considerable pressure was brought to reduce the hazard, resulting in the bridge being extended east from Corning Ave. over the multiple-track crossings to Oakes Ave. completed and open to rail traffic on January 1, 1930. GN

This was the last major track construction in Superior.

The rail line, from Tower Ave. to Billing's Park, was abandoned June 5, 1935.

3.13 ALLOUEZ

In its resolution to DSR on February 14, 1902, directing DSR to extend its EAST END line to 31st Ave. E. (see 3.8), the Superior Common Council also directed DSR to extend the line "east of the Nemadji River". Franchise negotiations of July 9, 1899 and a Council resolution of February 3, 1903 required that the line be built to Itasca. The ALLOUEZ line at this time was referred to as the Itasca Extension.

The original ALLOUEZ line, as built in 1907, required extension of the double track along Robertson Ave. (31st Ave. E.) from E. 5th to E. 4th Sts., then double track through a wye and east on 4th St. to a single-track 2600-foot timber trestle and steel span across the Nemadji River to McBain Ave. (38th Ave. E.), then north to a loop at E. 2nd St.:

Service on the line began November 1, 1907.

The records give no hint or reason for the four-year delay in building the line, or why it was built in the improbable and difficult days of the 1907 recession.

In June 1924 the 4th St. trestle was condemned as not safe for the passage of heavy vehicles; the heavy standard street cars could no longer be used on this line. See 4.44 for details of interim use of lighter-weight cars. Even these were not permitted to use the trestle after October 31, 1928 because of its poor condition. By now the Nemadji River was no longer classified as a navigable waterway, so DSR was permitted to build a 274-foot trestle and 1000-foot fill along the east side of 2nd St. Its tracks were extended east on 31st Ave. E., and then east along 2nd St. to the original loop at 38th Ave. E. Cars began using the new 2nd St. route on November 29, 1928, at which time the 4th St. route was abandoned. This relocation was side-of-the-road track along 2nd St. from 31st to 38th Aves. E. In August of the following year the track was moved to center-of-the-street between 37th and 38th Aves. E.

On November 23, 1920 the Wisconsin Railroad Commission denied the petition of the City of Superior, which for several years had sought to compel DSR to extend its tracks to Hennepin Ave. in Itasca (about two miles), stating that the line, "would hardly be warranted". DSR established a bus operation, instead, on July 13, 1925.

Much of the overhead trolley wires fell during a severe freezing rain storm on March 5, 1935, and the rail line was abandoned east of the 31st Ave. wye.

3.14 BROADWAY ST.

Immediately following the electrification in Superior in July 1890, a single track line was built on Broadway St. Although franchise provisions specified that a line was to be built from Tower Ave. along Broadway St. and Catlin Ave. to Belknap St. (see 3.4), the single-track line extended from Tower Ave. only to Clough Ave., a distance of 9 blocks, when service began February 1, 1891, thus satisfying demands for service to the City Hall and Broadway Flats built at that time. However, the line seems to have been extended to Catlin Ave. and then south on Catlin Ave. to Belknap St. at some time soon after.

Section 22 of the 1901 franchise between the City of Superior and DSR provided that, "It (DSR) shall take up and remove from Broadway St. and Catlin Ave. the tracks now laid thereon..." (see 3.6). Little else is known of this original BROADWAY line. The rail line was abandoned November 1, 1901.

Upon petition of the city, the Wisconsin Railroad Commission, on April 19, 1916, ordered a "Bay Front Extension" to be built and placed in service prior to December 31, 1917, in lieu of a fare increase which had been pending before the commission since November 1912.

There had been no street railway track extensions in Superior since 1907. A street railway line "to the bay front/dock front" was considered, among others, to be the "greatest public necessity" at this time. DSR had vigorously delayed building this line because considerably reduced gross and net earnings in the Superior Division did not justify the expenditure of an estimated construction cost of $82,000.00.

The line was built in 1917, as ordered, double track on Broadway, St. and Catlin Ave., then single- and double-track portions on Winters St. and Hill Ave. which were unimproved streets at that time. These tracks extended to a junction with existing Belknap St. tracks. Service began July 1.

The rail line was abandoned June 25, 1931 (see also 3.24c).

3.15 6TH ST.

Operation of the 6TH ST. line began January 29, 1893, a double-track line on 6TH St. from Tower Ave. to Lamborn (Grand), thence north on Lamborn to a juncture with the 3RD ST. line, which was then being extended to Connor's Point. It was reduced from double to single track in 1901. Operation was counter-clockwise until February 1918, utilizing a crossover, thus:

Thereafter, operation was clockwise, and the crossover was removed. The rail line was abandoned June 25, 1931. See also 3.24c.

3.16 21ST ST.

As early as 1912, the East End Chamber of Commerce pressed DSR for an "extension to the docks", a request that DSR half-heartedly agreed to in exchange for fare increases and street paving cost concessions. Just where this track extension was to be is not known. However, reestablishing of the BROADWAY line in 1917 and building of the 21ST ST. line in late 1921 brought street car service to the east side of the Tower/Belknap growth area. Neither extension, however, reached the docks.

In its order of April 19, 1916 directing DSR to build the BROADWAY line, the WRC also ordered the building of a line, "...for the purpose of serving what is known as the Normal School district. This extension shall be made on a route to be determined by the WRC, and shall be completed and in operation on or before November 1, 1919...determination of said route will be made by...DSR before September 1, 1918." In exercising franchise authority, city governments nation-wide--Superior and Duluth included--normally exercised the prerogative of determining the routing of street railway extensions. The somewhat ambiguous duplication of this authorization above, however, seems to have given DSR an advantage of two years in making the choice of a route, a rather heretofore unusual procedure.

As early as August 1916, DSR determined that the tracks would be laid in 21st St. from Tower to Grand Aves., then northwest on Grand to a connection at Belknap St., a distance of about 1 1/4 miles, passing close by the college at 18th St. and Clough Ave., which accounts for this proposed line being referred to as the Normal School line at this time. Five months later, this had been discarded in favor of a Catlin Ave. route. In June 1917, DSR was, again, giving serious consideration to building the "dock front" line.

Superior's seemingly endless fare litigations brought about repeated delays in resolving the route and construction deadline. Although a finally agreeable date was set for construction to begin on April 1, 1921, litigation dragged on, and a mutual agreement postponed this until fall, at which time construction of the line began.

Service began January 1, 1922, a single track line in the middle of 21st St. from Tower Ave. to a loop at Grand Ave. The original intent of extending the tracks north to a connection on Belknap St. obviously did not materialize.

The rail line, Tower to Grand Aves., was abandoned June 5, 1935.

MISCELLANEOUS RAIL, DULUTH AND SUPERIOR

3.17 RAIL AND ROADBED

"A.B. McLean & Co. (a local contractor) will furnish the iron rails for the first mile of the Duluth Street Railway...A train rail will be used, weighing 28 pounds per yard. 51 tons will be needed." This would provide approximately 5465 feet of track. The rail was shipped by barge from Cleveland on September 27 (1882) and arrived in Duluth October 20. These were laid on 4" x 6" ties. This narrow-gauge track for the original Superior St. horse car line (1882-1883) was laid in dirt streets, streets that were crude by standards of a few years later. However, in spite of the difficulties of cutting streets through and around rocky terrain, DSR rails were laid in excellent tangents and curves.

45 lb Johnson girder rail was used in the building of the original standard gauge and electrification of the Superior/Michigan Sts. and the EAST 2ND/4TH STS. lines in 1890. However, in the construction of the WEST DULUTH line the following winter (1890-1891), DSR graduated to 5 3/4-inch, 60 lb T rails. This size rail was also used for building the WEST 3RD ST. line five years later. The WOODLAND line, which was not built by DSR, had very light-weight 35 lb "Shanghai" rail when built in 1891. 79 lb 8" T rail was first used in the building of the wye at 3rd Ave. E. and Superior St. in January 1901 to facilitate the turning of the newly-acquired, large, double-truck cars which were assigned to the INTERSTATE line. A year later, this high-standard rail was used in relaying rail on the EAST SUPERIOR ST., 2ND and 4TH STS., LAKE AVE. and WEST 3RD ST. tracks. By 1909, 9-inch 91 lb steel was used for replacement of the GARFIELD AVE line. The ultimate was reached

end of 3.11 ~~Last~~ 7.4

~~Many of~~ Much of the track was removed from Duluth and Superior streets ~~following~~ after ~~the~~ operations ceased. This was sold as scrap ~~to~~ iro to Minnesota Steel Co's Morgan Park steel mill

~~Highland~~

1 track ~~150~~ 15' x 40'

~~5.8 22 44~~

in 1922 when 93 lb replacement steel was laid on heavily-traveled Superior St. downtown and on 2nd St.

Superior's first narrow-gauge, horse-car tracks were laid with strap-iron rail. These were bonded and used during the early days of electrification. They were eventually replaced by 35 lb 3 1/2" rails, laid on 3" x 5" narrow-gauge ties which, in turn, were laid on 2" x 12" planks because of Superior's unstable, clay soil.

A March 1900 Ford, Bacon & Davis Engineers' report stated "Practically all of the Superior lines should be rebuilt, as the present construction is not suitable for rapid operation."

Following the merger of street railways in Duluth/Superior in August 1900, there was an extensive program of track upgrading, most of it in 1902-03 when 1) almost all track was rebuilt and/or replaced in Superior. 2) almost all special work--switches, crossings, etc.--were replaced in Duluth. 3) conversion to standard gauge was completed in Superior. 22.5 miles of Superior's 26.5 miles of track were sub-standard 35 lb 3 1/2" rails when acquired by DSR in 1900.

Adding to DSR's early track problems was the extremely poor condition of tracks involved in the acquisition of the HUNTER'S PARK/WOODLAND, LAKESIDE and HIGHLAND lines. The tracks, built by real estate developers, were, for the most part, of sub-standard construction. And, from lack of maintenance, the tracks deteriorated into conditions so poor that acquisition by DSR was the only salvation from complete abandonment.

It was found that the double tracks on WEST 3RD ST. were too close together when the new, wider, double-truck cars were to be assigned to that line in 1909.

Duluth's dirt downtown Superior St. was improved with cedar block 'paving' in 1887. There seems to be some evidence in the records that Duluth's first paved streets were Superior St. from 8th Ave. W to 3rd Ave. E., and 3rd Ave. W. from Superior to 2nd Sts. Various accounts show concrete and 'macadamized' paving, which was accomplished simultaneously with the change of track gauge in 1890. By 1908, 42% of the track mileage in Duluth was in paved streets, and, of interest, 17% was in cedar block streets (mostly Oneota and Raleigh Sts. in West Duluth).

Cedar block paving was used extensively on streets in Superior in which rails were laid. These were not well maintained and caused considerable problems. Many were removed when tracks were converted to standard gauge. However, in 1910 15.5 miles of track in Superior were still laid with cedar block pavement. If cedar blocks can be considered a form of pavement, these were the only 'paved' streets in Superior at that time.

Not all tracks of DSR were in the conventional center-of-the-street. There were some varied exceptions:

The MORGAN PARK tracks were laid in an excellent, well-engineered center-reservation from Zimmerly and 93rd to the loop. With double-bracket center-pole trolley suspension, this was the only construction of this type on the system. The streets and track right-of-way were owned and maintained by the Morgan Park Co.

The following were side-of-road tracks during all or most of their existence: PARK POINT from 14th to 43rd St. on Minnesota Ave.; from the loop in Morgan Park to Commonwealth Ave., and along Commonwealth Ave. to the DM&N overpass; GRAND AVE. from 73rd to 93rd Aves. W. (one track only); BILLINGS PARK from New York Ave. to the end of the line on 21st St.; on the ALLOUEZ line along 2nd St. from 31st. to 37th Aves. E.

The following were on or beside unimproved streets: The INCLINE and the HIGHLAND AVE. line except on Orange St. and Mulberry St.; The PARK POINT line for a short stretch from 13th to 14th Sts. and on 14th St.; Catlin Ave. portions of the BROADWAY line; A short section of the Lake Ave. loop at the Canal.

DSR was frequently concerned with the erosion that resulted from wave action where its tracks were at water's edge at 40th-41st Sts. Sea walls of a sort were built and rebuilt on and after 1918.

3.18 TURNTABLES, LOOPS, WYES, SWITCHES, SIDINGS, CROSSOVERS, TROLLEY POLES

Turntables, installed in the street, were used for turning the horse cars during the narrow gauge era (1883-1890). With the coming of the double-end electric cars in 1890, these were eliminated, and crossovers were used on double-track lines.

Plans for the coming of the single-end, large, standard cars required the building of wyes and loops for the turning of these cars which began to arrive January 3, 1901. The first of these to be built was the wye at 62nd Ave. W. and Raleigh St. on the WEST DULUTH line in July 1899. The first loop to be built was at 61st Ave. E. & Superior St. on the LESTER PARK line on October 31, 1901. Loops and wyes eventually replaced all crossovers; the last of these being the one between 4th and 5th Aves. W. on Superior St. in July 1915.

DSR established "Storage capacities of spurs, loops and sidings" in Duluth in a directive of that title, a guide to the maximum number of standard cars that could occupy these tracks, in addition to a normal space allowed for turning one car. These ranged from 0 cars on the Commonwealth track-end to 1 car on the McCuen St. spur to 10 cars on the 39th Ave. W. spur.

Unfortunately there are no records of earliest wyes and loops in Superior.

Single-track lines required a passing track: HIGHLAND, PARK POINT (3), NEW DULUTH, SOUTH SUPERIOR (3), BROADWAY.

DSR's busiest track switching point was the eastbound approach to 3rd Ave. W. on Superior St. For many years a "switchman" was utilized here to "throw the switch" and otherwise speed the movement of cars through this busy intersection. The hazardous duty was eliminated on December 1, 1920 when DSR installed its first electric track switch. Electric switches on Superior St. westbound at 8th Ave. W. and eastbound at Lake Ave. were installed in July 1922. Additional installations were made in September 1928: to Garfield Ave., to Piedmont Ave. and to 21st Ave. W. westbound on Superior St., and to Belknap St. southbound on Tower Ave. An installation was made northbound at 5th Ave. E. and 4th St. on May 12, 1929, and at 57th Ave. W. westbound on November 15, 1929. The last were at 32nd Ave. W., westbound on Superior St. on September 25, 1934, and both east and westbound on 2nd St. at 2nd Ave. E. in November 1936.

Of incidental interest, DSR employed so-called "curvemen", whose duty it was to grease the inside curved track flanges to reduce friction and loud, piercing sounds. This effort seems to have become impractical with the proliferation of automobile traffic.

Mostly, trolley wire and feeder wire were suspended from curb-side/road-side poles, steel poles in urban areas, wood poles elsewhere. Exceptions were the center-of-street poles in Morgan Park and, in early days, E. 4th St., Woodland Ave. and the viaduct portions of Garfield and Lake Aves.

3.19 GRAVEL PITS, QUARRIES, DUMPS

The earliest record of a DSR gravel pit is a brief, 1903 reference to a "Macfarlane" pit on a spur from Woodland Ave. somewhere between St. Marie and Hardy Sts.

Much more is known, however, about four 40-foot lots that DSR bought on the north side of E. 9th St. between 8th and 9th Aves. E., and which were converted to a gravel pit soon after the EAST 9TH ST. line was built in 1912. This was depleted and abandoned in April 1920.

A 950-foot spur track was built from Kenwood Ave. east along undeveloped 12th St. to a gravel pit near 11th Ave. E. in May 1921 to replace the 9th St. pit. When 11th Ave. E. was extended north from 11th St. to Kenwood Ave./Boulevard in July 1929, DSR sold to the city a portion of five lots at the east end of this spur.

Gravel was removed from a temporary pit (a 200-foot spur track) on the south side of Boulevard/Kenwood Ave. in April 1924 for use in building the KENWOOD AVE. extension. A 250-foot spur was installed in May 1928 at Cleveland St. near the end of the KENWOOD line. The spur was abandoned and removed in November 1933.

In the building of Duluth's first street car line, 1882-83, brief reference is made to "the quarry" at 8th Ave. W. Some additional rock was removed when a wye, and later a loop, were built here.

At a date not known, but as early as 1907, DSR built a spur track on 12th Ave. W. from Michigan to Superior Sts., thence a 560-foot extension west on Superior St. to a City-owned and operated rock quarry, crusher and bin. This developed into a considerable operation for DSR after it entered into an agreement with the City in April 1908 to haul rock from this quarry to an extensive shoreline reinforcement project at the east edge of Morse St. DSR's Morse St. wye was extended at this time. In succeeding years, DSR hauled considerable tonnage of crushed rock for the City, primarily for street improvement projects.

350
34 In 1911, a 250-foot siding was built along Superior Sts. south side ~~to about~~ between 33rd 38rd Aves. W. to a tipple referred to as "Rock Bin" under DM&N (ore) dock #6 for the receipt of gravel, crushed rock, sand and other bulk aggregate. With the abandonment of the ball park siding in 1929--see 2.23d--this spur track took on the additional duty as a car-holding track for ball park crowds. This track was removed in May 1936 when a street (33rd Ave.) was put through.

Several other spur tracks were built and modified in this general area beginning in the late '90s. These were reduced in 1928 to one siding extending westerly from 32nd to 38th Aves. W. and used primarily as a dump for ashes and 'clean' debris. 33rd

3.20 RAIL LINE EXTENSIONS: ORDERS, PROPOSALS, POLICY, LITIGATION

A major portion of DSR'S files contained correspondence, memos, reports, charts, statistics, legal briefs and other data related to rail line extensions and fare increases. From these it is quite obvious that a considerable amount of time and effort was expended on these matters, primarily on the litigation in which they were involved. Documentation of finances and operation, correspondence, preparation of exhibits, and public and court appearances consumed tremendous totals of man hours of DSR staff and legal aides. One wonders at the patience of DSR management in tolerating the prolonged and seemingly endless harassment from those who espoused quite irresponsible ambitions for extensions of street railways, and those who fought DSR's need for a fair return on investment through fare increases. It becomes quite evident that this subject is far too complex and pervasive to lend itself to singular explanation or review here. So, only brief observations of DSR's involvement follows.

Requests for rail line extensions originated in a wide variety of ways, by individuals, by political and pressure groups, by Council actions, and, most often, by real estate promoters/developers who spoke grandiloquently of the virtues and benefits of street railways. These, in turn, lead to encounters with administrative and regulatory bodies and agencies at several levels. Inasmuch as most street railways were originally private enterprises, they invariably become fair game for local authorities, and upon which there seemed to be no closed season--much like coming out against disease, sin and the devil. With little or no knowledge of such matters, and sometimes with ulterior motives, official and semi-official agencies/bodies placed unreasonable and misguided demands on DSR for rail line extensions, and in other ways attempted to regulate and/or interfere in the company's operations.

Admittedly, some street railways were not well planned, and were sometimes, not well operated or profitable. Whether because of, or a result of, much meddling by local authorities, long before the ICC began regulating the nation's railways, street railways became quite probably, our first highly-regulated big business. Because of their considerable involvement in the community fabric, and because of their considerable affect on real estate and business enterprise, hostilities, tension, disagreements and distrust developed between utility management and self-interest individuals and groups. To many of the later, the economics of a particular utility extension did not seem important. Although the street railway was a recognized valuable tool in the promotion of business and the development of real estate, the sometimes less than favorable results of real estate developments resulted in less than favorable return on investment for street railways built to or through those developments, particularly the long, costly lines to the suburbs. See, for instance, the questionably successful Highland promotion (see 2.8), or the building of the MORGAN PARK-NEW DULUTH line which forced DSR to provide an 18-mile ride for a 5-cent fare; 1/4-cent per mile!

DSR was particularly disadvantaged by the low population densities and by the dispersion of urban and suburban home sites in both Duluth and Superior, as compared, for instance, to the excellent concentrations in Minneapolis, and the ability to collect extra fares on the Twin City suburban lines.

Paradoxically, however, even in the harried days of the 1920s when DSR was being badgered with requests for rail and bus line extensions in several areas of the city--the prolonged hearings concerning DSR's strong reluctance to extend the EAST 4TH ST. line in 1927. DSR expressed a desire, and a wise one, to build a rail line on 7th St. west from a connection with tracks on 6th Ave. E., this being, in DSR's estimation, a "...more...warranted extension at (that) time." Included with this proposal was a vague plan to connect the proposed line with the

HIGHLAND line in some manner (DSR had never been very happy with the costly operation of the 7th Ave. W. INCLINE). A similar plan had been proposed as early as March 1912 (see also 2.18) for "...a new Y-shaped street car line to open up the country between Duluth Heights and Woodland Park (Kenwood)..."

The 7th St. line, even without connections or extensions to Duluth Heights, would have served an area of excellent population density that would have, in turn, produced far greater revenues than the ill-advised KENWOOD line extension, and would have allowed a much earlier abandonment of the albatross WEST 4TH ST. line. DSR's recommendation, unfortunately, fell on deaf ears.

Interestingly, demands for rail line extensions were quite frequently linked to requests for fare increases and/or other fare-related matters: tokens, transfers and fare collection. In those several instances--primarily in Superior--one was used as a pawn to gain advantage for the other in litigation.

The fare/rail extension syndrome became quite complex in Superior when, in late 1910, J.B. Van Vleck, chairman of a Commercial Club committee of Superior, threatened--through a collaborating newspaper editor--to take action to force DSR to reduce fares: from 5-cents to 6 for 25-cents. As in other, similar actions which invariably lead to extended litigation, ulterior motives were obvious. In a letter to DSR President C.G. Goodrich dated December 16, 1910, General Manager Herbert Warren stated, "It is frankly admitted that the threatened action to reduce fares is only to be used as a club to force the company to build extensions. I mention Mr. Van Vleck in this connection because he was the person that became so angry a few years ago when we declined to accept a free right-of-way for a line to the (Superior) Steel Plant...The object of this committee is to compel us to building extensions...Mr. Van Vleck, who is most active in the matter, is generally understood to be interested in real estate that will be especially benefited by the extension."

In the 1890s, street car suburbs sprang up rapidly in Duluth, as elsewhere, when electric street car service offered rapid, clean and inexpensive transportation. Attractive, affordable housing became available in Woodland, Hunter's Park, Lakeside, Lester Park and Morgan Park...street car suburbs that were developed by combinations of public utilities and private enterprise.

On a national scale, nearly 2,000 miles of street railway track were laid in each year of the century's first decade. Although the tempting and often risky pursuit of real estate profits was the primary driving force, one must marvel at the visionary men who planned and built those street railway extensions. Some were successful; some were not. As costs increased rapidly during and after WWI, and with trends toward static populations and demographically disadvantageous shifts not withstanding, which resulted in decreasing passenger traffic and revenues in both Duluth and Superior, there continued to be unrelenting demands for extensions to nearly every corner of the two cities.

The unfortunate lack of a demographic study in Duluth or Superior in the early years of the street railways' expansions allowed non-professional special-interest groups to pursue short-term measures to meet immediate—often questionable--objectives. See, for instance, DSR's involvement in Woodland (2.7). A comprehensive, conclusive feasibility study was never attempted singly or jointly by DSR, the city or any other interested group during that era. The Council's absurd orders, for instance, that DSR built the W. 4th ST. to Mesaba Ave. line without delay would certainly bear this out. This was true also of the several orders to build the PIEDMONT AVE. and the W. 3RD ST. lines when the streets were not suitably prepared. Whether expressed or implied, legislated or demanded, reasonable or unjustified, DSR was almost constantly the target of criticism and pressure concerning rail line extensions.

In DSR's original franchise, and upheld again in 1915, certain criteria were established regarding the building of rail line extensions. One specification in the company's franchises provided that extensions could be ordered (only) on streets which were, "...suitably improved for street railway purposes..." (in Duluth), and on streets, "...in reasonably good condition for the construction, maintenance and operation of a street railway line..." (in Superior). There seems to have been no question at that time, apparently, about what constituted a "suitable" or "reasonably good" street. The fact seems evident though that the streets involved in the several litigations were NOT improved, suitably or otherwise.

Among those who exerted pressure on DSR for extensions in Duluth, the most aggressive was the Duluth Real Estate Exchange, a group of real estate promoters, whose chief spokesmen were Richardson, Upham, and Field. Primarily because of the set-back to their somewhat ulterior motives that resulted from DSR's refusal to build a line to the Greysolon Farms on their terms (see 3.22), the whole complex, difficult matter of rail line extensions in Duluth came to a boiling climax in April 1912. DSR had documented the losses it had incurred and problems it had inherited when it acquired rail lines that had been built in connection with previous land-development schemes--rail lines that the promoters had allowed to deteriorate after they ceased to fulfill their original purpose in Woodland, Lakeside and Highland. After these unfortunate experiences, DSR was not likely to be receptive to similar plans for Kenwood, Morgan Park, the West Duluth hillside or a surface line to Duluth Heights.

Although DSR was aware that ulterior motives were behind many requests for rail line extensions, management preferred, instead, to refer politely but firmly to its "Facts" memo issued in April 1912 to the city council, which stated, "...its policy regarding extensions..."--and which the council seemed to conveniently neglect to comment upon. Sporadic agitation continued for two more years, at which time DSR felt compelled to issue a public statement "Street Railway Extensions", a 12-page booklet which reviewed the whole matter in excellent detail, and justified DSR's position at the time. But not until the enactment of the Brooks-Coleman Law* in 1921 did DSR get relief from this nagging dilemma.

DSR continued to wrestle with these requests when bus service replaced street cars. In well-chosen words, DSR General Manager Herbert Warren stated, "...the service (that will be offered) will not be what the traffic reasonably justifies but what the public authorities require..."

In the six years following abandonment of rail operations and the substitution of buses, DSR received petitions and requests for no less than 29 route extensions!

3.21 PROPOSED "BELT LINE"

In its 1909 report to the stock holders, DSR expressed the probability of some day extending its service to Morgan Park from South Superior. "The building of the Steel Plant (at Morgan Park) may ultimately require the extension of a line from Superior to the steel plant location, and thus form a belt line connecting the (two) cities by way of the steel plant, crossing the St. Louis River on a bridge now being built by the steel corporation, on which provision is being made for street railway tracks."

DSR was a bit over-optimistic about the additional traffic and economic benefits that the Morgan Park steel plant project would bring. The dreamed-of belt line would have required the building of a four-mile-long line from Morgan Park to the SOUTH SUPERIOR line, the closest line in Superior, at Tower Ave. and 63rd St.; and the less-than-desirable fact that it would have passed through a wholly undeveloped rural area doomed the project.

All or most of this enthusiasm to build a line from Superior to Morgan Park had disappeared by July 1912 when DSR was gratified to learn that, in addition to its own reluctance to build any additional lines in Superior, the mayor and newspapers, too, were willing to forego any agitation for rail line extensions until the bitter fare controversy was resolved. (Extension of the GRAND AVE. line reached Morgan Park in June 1916).

3.22 PROPOSED GREYSOLON FARMS AND LAKEWOOD EXPERIMENTAL FARMS LINES

A Minnesota Legislative Act of April 23, 1909 provided for railroads and street railways to contract for joint operations, enacted primarily to facilitate the building of passenger-carrying railways in suburban areas.

Pursuant thereto, Charles P. Craig, vice president of the former Highland Improvement Co., and John G. Williams established their Duluth and Northern Traction Co. (DNT), also referred to as "The Suburban Co." Although not specifically indicating what plans it had for rural rail lines, DNT requested

* On April 29, 1921, the Minnesota State Legislature passed the Brooks-Coleman law, providing that utility companies would operate under permits granted by State agencies.

And received from DSR a report dated November 1, 1909, "Estimated cost of building and equipping 6 1/2 miles of first-class single-track electric railway...with terminal loops at each end and a 200-foot turnout in the middle...$184,204 maximum, $120,965 minimum." The difference in price appears to have been in the size of rail and in the quality of ties, poles, ballast, etc. Included were a 40-foot, four-motor "express and passenger car": $6,000; and a 40-foot, four-motor flat car: $5,000.00. Not included were power supply or transmission, grading, culverts, depots, snow removal equipment, taxes or land for terminal loops. The trolley line was to operate on cost-free side-of-road.

Craig had purchased considerable acreage along the northeast perimeter of Woodland in May 1910, preparatory to a perceived establishment of his Greysolon Farms Co., a portion of which Craig offered to the University of Minnesota, Department of Agriculture for an attractive price. The University regents, on August 10, 1911, agreed to purchase 240 acres and establish the Duluth Demonstration Farm School "...provided that (Craig) construct or cause to be constructed a street car line connecting with the present (DSR) city lines...".

The proposed trolley line--frequently referred to as the "Craig Line"--was to connect the projected farm project with DSR's WOODLAND AVE. line at or near Hardy St. Why DNT chose Hardy St. seems not to be recorded; a connection at DSR's St. Paul St. wye would have shortened the DNT line by about half. (DSR hinted later that the longer route gave Craig a considerable exposure and access to his real estate holdings).

DSR submitted a comprehensive operating contract draft to DNT on January 6, 1910. During the next 14 months several amended contracts were exchanged. Chief stumbling blocks in the negotiations were the inability to resolve the matter of fares, and DSR's reluctance to build the line as projected which would have quite needlessly paralleled DSR's WOODLAND line.

On April 18, 1911, Craig expanded his plans when he requested a 65-foot right-of-way through Park Hill Cemetery at no cost to him. DSR and the cemetery board did not take favorable action.

As the DNT plan wound down, the Duluth real estate firm of L.A. Larson Co., on February 10, 1912, began "missionary work" on a tepid promotion of a planned Lakewood Experimental Farms which proposed to involve DSR, the Duluth & Iron Range Railway and the cities of Duluth and Two Harbors. The plan seems to have died on the vine when the UM regents approved purchase, instead, of the Greysolon acreage. In the aftermath, DSR was convinced that it should not be involved in what it perceived to be real estate speculation, and with no assurance that these were reasonably sound business ventures (see also 3.20).

3.23 OTHER PROPOSED LINES

In addition to those already referred to--W. 4TH ST. to 14th Ave. W.; PARK POINT to the Wisconsin shores; WOODLAND line to Homecroft; the Lake Ave. incline; West Duluth to Proctor; South Superior to Morgan Park; EAST 4TH ST. to Ridgewood Road; ALLOUEZ to Itasca--there were other proposals to build or extend rail lines in conjunction with or in competition with DSR lines, all of which failed to go beyond the planning stage:

a. During the planning of the E. 9TH ST. line, the City Council passed a resolution (January 22, 1912) directing DSR to build a line to Duluth Heights from a planned connection with the E. 9th line at or near 7th Ave. E. The action made no reference to a route, and no offer of a street or streets upon which DSR could lay the tracks.

b. DSR was well aware of the ever-present threat of paralysis which existed on its Superior St. tracks between 3rd and 8th Aves. W. All cars operating in Duluth (except the HIGHLAND line) passed through this bottleneck. A serious fire or accident along these five blocks would cause a tie-up of much street car operation in the city.

On several occasions DSR and City planning agencies had proposed solutions to the problem. The NEWS-TRIBUNE of December 27, 1918 made this announcement, "A downtown loop...will become a reality at once. City engineers have started a survey of Mesaba Ave. from Superior to 1st St. which would, under the proposed plan become one side of the loop...eastward to 3rd Ave. E., down that avenue to Superior St." Obviously the Mesaba Ave. obstacle was never resolved. Then in December 1926, the City planning department, along with a consulting firm,

proposed a westward extension of the 2nd St. tracks to by-pass this stretch. The track diagram presented by the consultants was conveniently cut off at about 9th Ave. W., so it is not known, nor was it stated, how the planners expected the proposed 2nd St. tracks to get through or down from the great rock obstacle west of Mesaba Ave. to again join the main line tracks at some vague point in West End.

The plan also proposed loops below Superior St. in the downtown area which would have involved grades probably too steep to have been practical. Thus, though they looked good on the drawing boards, the proposals were not practical.

c. DSR was concerned about the hazards of wyeing its cars at the busy intersection of Piedmont Ave. and 10th St. where also was located a public school. Several times during the '20s, an extension of the line or a loop track were sought unsuccessfully as a solution to reduce the hazard, made difficult because of steep grades and narrow streets.

d. In March 1928 DSR made a feasibility study of a single track line on Carleton St. between Superior St. and Grand Ave. (W. 3rd St.) to reduce deadhead mileage of GRAND AVE. cars going to and from the car house at 26th Ave. W. (via 21st Ave. W). A study indicated that the savings in car operation costs did not justify the initial cost of track and trolley overhead construction. In fact, depreciation and interest charges on the cost, plus taxes totaling $2,400 annually, exceeded the annual savings, not to mention the initial construction cost of $21,000. The study made it quite obvious that there would be no savings.

e. When the (Minnesota) State Railroad Commission refused to allow the Northern Pacific Rwy. to abandon Fond du Lac and Thompson Dam rail bus service in November 1925 unless suitable substitute service could be provided, the NP suggested that DSR lease its rail line for trolley operation. DSR initiated a bus service, instead, on January 1, 1926.

f. On November 1, 1902 DSR and A.C. Volk & Co. entered into an agreement whereby ACV, "...owner of a large tract of land in New Duluth...", indicated a desire to build a street railway..." at their own proper cost and expense..." from the terminus of DSR's WEST DULUTH line on Raleigh St., crossing the NP Rwy. west to Grand Ave., west on Grand Ave. to 93rd Ave. W. (Smithville), south to Sears Ave., west to State (Fond du Lac) Road, thence to Commonwealth Ave. (100th Ave. W.), south to Prescott St., a distance of about 6 miles. ACV, with DSR approval, was to build the line and, "...equip, run cars upon, and transport passengers for hire on said proposed new line and operate said proposed new line...said line shall be completed and fully equipped by November 1, 1904..."

On March 23, 1903 an ordinance was passed by council, "...granting to A.C. Volk & Co. and assigns the right to construct, maintain and operate an electric street railway in the City of Duluth." Two years later, on November 6, 1905, by resolution, Council took necessary steps, "...to revoke the franchise granted to (ACV) for the construction of a street car line, from West Duluth to New Duluth, said company have never proceeded under said franchise to construct any portion of such line of street railway."

DSR built the line in 1916-17.

g. In March 1910, Duluth Realtor G.G. Hartley proposed a 2 1/2-mile-long trolley line through Forest Hill Cemetery and into and through his adjacent land holdings, connecting the same with DSR's St. Paul Ave. wye (see also 5.57c). Apparently this was a competitive ploy at the time of convulsive plans for the Greysolon Farms plan (see 3.22). Nothing came of the plan.

h. In a half-page display ad, along with stock proposals, in the May 11, 1907 SUPERIOR TELEGRAM, the Twin City & Lake Superior Rwy. announced ambitious plans to build, "...an electric double-track high speed railroad..." between the Twin Cities and Twin Ports. The "Arrow Line" was to utilize the "Farnham Inverted Protected Third Rail Electric System", named, apparently, for E. W. Farnham, president of the company. "The company has completed preliminary surveys...it has the right-of-way from City Limits to City Limits. The public will be advised as to terminals." On an accompanying map, a straight line has been super-imposed between the Twin Cities and the Twin Ports. Promotional and grading progress reports appeared in the April 1908 and August 28, 1910 Twin City newspapers. Some grading was accomplished. Interestingly, the stock offer stated that the investment would, "...return to its stockholders annually every promise multiplied the biblical ten-fold." The promise was broken: the line was never built.

i. The Superior-Cloquet Electric Railway Co. was incorporated on March 2, 1896 by George B. Hudnall, Michael S. Bright and John H. Bardon for $125,000, with

plans to build an (electric?) line, 30 miles long, as indicated by its name. Nothing more is known.

j. The (Superior) Steel Plant Traction Co. was capitalized for $100,000, incorporated on July 30, 1912, and franchised on December 10, 1913 to build an electric line from Tower and Central Avenues in South Superior to Oliver, where a bridge was being built across the St. Louis River, close by the U.S. Steel plant, then also being built. DSR also considered the same plan (see 3.21). Neither plan materialized.

k. The Superior Suburban Railroad Co. was incorporated on August 1, 1902, "...to build electric lines in Douglas County." Nothing else is known of where, when or how.

l. The Duluth Electric Street Railway Co. (believed to be affiliated with the Duluth Belt Line Rwy.) was organized in March 1890 during the days of heated franchise discussions; promised to build a (competitive) line on 1st St., but was suspected of land development motives.

m. The City Railway Co. was incorporated and franchised on November 24, 1893 for operations in West Duluth--probably in anticipation of the W. 3RD ST. line, then being planned by DSR. Nothing came of this venture.

3.24 RAIL LINE REDUCTIONS AND ABANDONMENTS

Factors which contributed to the abandonment of rail lines were numerous and varied.

Several major street repaving projects occurred in Duluth and Superior in 1931, 1934-35 and 1939. The great capital costs that would have been forced upon DSR by these repaving projects compelled DSR to give serious consideration to the abandonment of street railway operations, as was already taking place in many other cities. A carry-over from franchise provisions established in the horse car era, street railways almost everywhere were unfairly required to repair, maintain and repave that portion of the street--about half--in which the track was located, this in addition to the costly repair, maintenance and replacement of the tracks. DSR opted to abandon its tracks when faced with this dilemma of prohibitive costs several times in later years, abandoning all remaining tracks in summer 1939 when West Superior St. was repaved. A severe decline in passengers and revenue during the Depression years, a lack of funds for capital improvements, worn out and costly-to-operate equipment, considerably greater use of the private automobile, and a corporate and public change of mood from street cars to buses were hastening the day of reckoning. The big, yellow street cars had unequivocally joined the list of endangered species.

a. DULUTH

After years of deficit operations and several futile appeals to the City, Duluth's lowest revenue line, the WEST 4TH ST. line, was abandoned on July 24, 1930, the first line to be abandoned in Duluth (see 2.13). Annual savings from discontinuation of operations was estimated to be $7,500.

The LESTER PARK tracks from 45th to 61st Aves. E. were abandoned on August 26, 1931 when E. Superior St. was repaved (see 2.10).

The repaving of E. Superior St. from 3rd to 18th Aves. E brought about the end of EAST END, ARMORY, HUNTER'S PARK, WOODLAND and CROSLEY-LESTER PARK rail operations over E. Superior St., including the ARMORY loop tracks, after July 27, 1934. EAST END, HUNTER'S PARK, WOODLAND and rush-hour-only CROSLEY-LESTER PARK cars thereafter were routed via 3rd Ave. W., 2nd and 4th Sts. (see 2.9).

The KENWOOD AVE. rail line was abandoned August 31, 1936, but a modified temporary service was continued as far as 13th St. until February 12, 1937 (see 2.18).

Primarily because of an inadequate bridge and poor tracks, that portion of the WOODLAND line on Woodland Ave. between St. Marie and Hardy Sts. was replaced by a shorter route over a new bridge and an extension along Wallace Ave. in 1901 (see 2.7(3)).

Fare litigation and other little-known factors caused the abandonment in 1894 of the 12th Ave. E. track used by WOODLAND cars (see 2.22c).

An easier grade afforded by Wallace Ave. brought about a change in the routing of the WOODLAND line in December 1891, and the original tracks on Woodland Ave. between 4th St. and St. Marie St. were abandoned soon after (see 2.7).

Jan-16 Important events in history of Co. corporate

Memorandum of Important Events in the History of The Duluth Street Railway Company with Particular Reference to Occurrences Affecting the Income of the Company.

The company was organized October 25, 1881 and began operation in 1882 (1883) with about a mile of track and ~~two or~~ three horse cars.

First Receivership

corporate

On August 5, 1891 the stockholders authorized the directors to apply to the District Court of St. Louis County for a receiver to take hold of the property for the benefit of the stockholders and the creditors. On August 28, 1891 the stockholders authorized the directors to have the affairs of the company taken out of the hands of the receiver and to resume control thereof.

structures

Between 1889 and 1892 the growth of the City of Duluth was very rapid and between these years the company increased its trackage in Duluth from 4.22 to 28.93 miles, electrified the entire system, built the present 26th Avenue West carhouse and also built the 11th Avenue West and Michigan Street steam power plant, building this plant in two sections, one being built and equipped about 1890 and the other in 1892. The additional equipment of the steam power plant consisted of a 1000 H.P. compound condensing steam engine belted to four General Electric generators, two of which were of a capacity of 270 K.W. and the other two of 300 K.W. Previous to the installation of these four generators the generator equipment had consisted of five generators of about 62 K.W. each which were belted to a 500 H.P. engine.

structures

The rapid increase in the passengers carried from about 3,000 passengers per day in 1889 to about 12,500 passengers per day in 1892 had seemed to call for this great increase in the power facilities of the company, but before the new generators were ready for operation the boom which had been on in Duluth burst and two of the new generators were never made use of until about 1896.

Strike of 1893

personnel

The passenger revenue of the company decreased from about $1,100 in July, 1893 to about $640 in September, 1893. This decrease in the passenger revenue necessitated a reduction in the wages of employes and that brought about a strike of all employes on September 1, 1893. There was not a car operated from September 1st to September 4th, when the employes resumed work under a compromise agreement. The loss in receipts occasioned by the strike was approximately $2,500 and the direct expense of the strike, exclusive of the loss in passenger revenue $667.11, making the total cost of this strike about $3,167.11.

Second Receivership

corporate

In 1898 the company was again put in the hands of a receiver and was operated by the receiver until the re-organization of August 13, 1900.

Strike of 1899

personnel

All of the employes of the company in 1893 and for sometime prior thereto had been members of the Amalgamated Association of Street and Electric Railway Employes of America and the compromise which ended the strike of 1893 was made with representatives of that organization. It was necessary to dismiss some of the union employes for good and sufficient cause during the winter of 1898-99 and such dismissal resulted in agitation which necessitated further dismissals and brought about the employment to a large extent of a new force of employes, but the former union employes remained in the city and on May 2, 1899 they succeeded in inducing the new employes to quit their work. This brought about the strike of 1899. The

receipts of the company previous to this strike were about $650 per day. This strike lasted several weeks and was accompanied by a considerable amount of disorder and violence. It is estimated that the curtailment of service during the strike resulted in a loss of receipts of $5,029.56. The cost of this strike, exclusive of loss of receipts, was $9,211.74, making the total cost of the strike $14,241.30.

The Superior Rapid Transit Railway Company operating in Superior, Wisconsin, had also been in the hands of a receiver for sometime prior to 1890.

Purchase of Superior Street Railway Property

In August, 1900 The Duluth Street Railway Company was taken out of the receivership and on August 13, 1900 it purchased the Street Railway property of the City of Superior at a receivership sale and has since operated the Duluth and Superior Street Railway properties as one system.

Inclined Railway Fire

On May 28, 1901 the amusement pavilion which had been owned and operated by the company and which was located at the Head of the 7th Avenue Inclined Railway took fire and it and the power house containing the steam hoisting machinery of the Inclined Railway were completely destroyed as was also one of the cars which was at the top at the time of the fire and which broke loose and came down to Superior Street in flames. The Inclined Railway plant was rebuilt and put in operation again with one small electrically propelled car and a counterweight on January 1, 1902, but the pavilion was never rebuilt.

Duluth-Superior Bridge Disabled

On August 11, 1906 the draw span of the Duluth-Superior bridge which had since about 1897 furnished the only means of the company's cars running between Duluth and Superior was knocked off the center pier into the bay by a large freight boat and it was not until September 27, 1908 that traffic by way of street cars between Duluth and Superior could be resumed over the bridge. In the meantime the company built a temporary branch track from its Superior line down to the dock front and street car passengers were carried from the dock in Superior to the dock in Duluth by means of ferry boats. The company incurred some expense in connection with caring for its passengers in this way besides losing considerably in passenger revenue during the time the bridge was disabled.

Strike of 1912

In September, 1912 a few of the employes of The Duluth Street Railway Company formed a union and on September 9, 1912 they induced the remaining employes of the company to go out on strike which eventually involved the employes in Superior as well as in Duluth. This strike was accompanied by a considerable amount of disorder and violence and was not officially called off until November 6, 1912. The loss in passenger revenue from curtailment of service on account of the strike was estimated at $75,031.31 and direct expense of the strike, aside from the loss in revenue, amounted to an additional $78,094.61. Including loss in revenue, direct expense and estimated damage to property, and accidents due to use of new employes, this strike cost the company anywhere between $175,000 and $200,000.

Jitney Invasion

On March 14, 1915 the first jitney bus appeared on the streets of Duluth. The snow had all disappeared early that spring and the streets were in good condition for automobile traffic. The number of jitneys rapidly increased until there were over 150 in operation in competition with street car lines by midsummer. The loss in passenger revenue from this jitney competition during the year 1915 was estimated at $150,000. The jitneys practically ceased operation when snow came,

but resumed in the spring of 1916, although in less numbers than in 1915. At one time in 1916 it was estimated that they were taking about $1,000 in passenger revenue per week from the street cars, but by August, 1916 this had dropped to about $500 per week. In March, 1917 a few jitneys again appeared and in April and May, 1917 they were estimated to be taking $150 to $200 per week in receipts from the street cars, but the patronage of the jitneys did not get above an estimate of $200 per week during the summer of 1917 and in October and November dropped to about $75 per week. A couple of jitneys appeared on the streets in the spring of 1918, but the "jitney craze" was practically over in Duluth after the fall of 1917. These jitneys operated principally between 26th Avenue West and 15th Avenue East on Superior Street taking the "short haul" or"cream" of the street rail traffic where the pavement was good. During the summer of 1915 there were no restrictions whatever on jitneys and they ran whenever they liked and where they pleased, but the city eventually passed an ordinance requiring them to furnish bonds and this together with the wearing off of the novelty and the realization of the jitney owners that they could not profitably carry passengers at 5 cents caused the jitneys to disappear in Duluth. It has been estimated that the jitney invasion cost the company in loss of revenue about $200,000; $150,000 in 1915, $40,000 in 1916 and $10,000 in 1917.

Second Duluth-Superior Bridge Disablement

On October 12, 1918 a fire, which swept over Duluth and vicinity, burned the Duluth approach to the Duluth-Superior bridge and seriously damaged the bridge proper and the bridge was again put out of use and street car passengers were again compelled to use ferry boats to get between the end of the company's lines at the docks in the respective cities. It was not until November 7, 1918 that street car traffic was again resumed over one side of the Duluth-Superior bridge and not until November 20, 1918 that both tracks were used.

Influenza Epidemic

The influenza epidemic of the fall of 1918 which caused a ban to be put upon all public gatherings seriously affected street railway earnings in Duluth and Superior. The passenger revenue for the months of October, November and December, 1918 instead of showing an increase over the corresponding period of the preceding year showed an actual decrease of $38,933.35 and a conservative estimate of the loss in revenue to the company due to the epidemic would be $50,000.

The above memorandum outlines what I think were the most important events affecting the company up to the time of the war.

Vice Pres't & Gen'l Manager.

HW/MS
6/25/21.

Tracks of the EAST 4TH-WEST 4TH ST. lines were moved from 6th to 5th Aves. E. between 2ND and 4TH Sts. in 1909 to provide an easier grade above 4TH St. preparatory to building the EAST 9TH ST. line (see 2.17).

As construction of the 2nd Ave. E. loop tracks approached final stages, it was necessary to abandon the tracks on Superior St. between 2nd and 3rd Aves. E. and the 3rd Ave. E. wye on September 14, 1936 (see 2.9).

Reduced to rush-hour service only, after the PARK POINT rail line was abandoned, that portion of the LAKE AVE. line from Michigan to Sutphin Sts. was reduced to single track in July 1931 (see 2.11).

The double track on Lake Ave. on Park Point was reduced/forced to a single track when that avenue was paved in 1914; and to a single, side-of-the-road track on Minnesota Ave. when that avenue was paved in 1915 (see 2.21).

Poor track, unstable roadbed, worsening street traffic congestion, elderly equipment and a new pro-bus management combined to bring about the demise of rail operations on Park Point on June 15, 1931. A petition had been filed in Federal Court on February 2 requesting authority to abandon (see also 4.36).

The GARFIELD AVE. (INTERSTATE) rail line was abandoned June 5, 1935 when the Superior portion of the INTERSTATE line was abandoned on that date (see 2.12). The 12th Ave. W. wye, which had been used primarily for turning northbound INTERSTATE cars, was abandoned soon after.

When tracks were laid on 21st Ave. W. between Superior and 3rd Streets in May 1912, the tracks on 3rd St. between 19th and 21st Aves. W. were abandoned (see 2.14).

The temporary 39th Ave. W. detour was abandoned when the Jenswold St. underpass was completed in 1903 (see 2.6).

Construction of the Garfield Ave. viaduct and the relaying of related tracks on Superior St. between 13th and 18th Aves. W replaced tracks on Michigan St. between those avenues in 1902 (see 2.12).

The PIEDMONT AVE. rail line was abandoned on May 10, 1934 when that avenue was repaved (see 2.16).

The WEST DULUTH (Oneota St.) rail line was abandoned west of 28th Ave. W. on March 13, 1939 (see also 2.14).

Rail service on 57th Ave. W. ended May 2, 1939.

The NEW DULUTH line was abandoned south of the sub station/DM&IRR overpass on May 5, 1937 when Commonwealth Ave. was repaved (see 2.19).

A temporary access track on 85th Ave. W. connecting the newly-built GRAND AVE. (RIVERSIDE) line with the Northern Pacific Rwy. tracks was removed soon after construction of the MORGAN PARK-NEW DULUTH line was completed in October 1917 (see 2.19).

The repaving of W. Superior St. from 14th to 29th Aves. W. isolated the shops and other facilities from the rest of the system. Minnesota's regulatory Railroad & Warehouse Commission gave DSR permission on April 12, 1939 to abandon all remaining street railway tracks.

Gravel pit spurs on the EAST 9TH ST. and KENWOOD lines and on Woodland Ave. were abandoned as others were opened (see 3.19).

A minor item, but of no little interest, related to abandonment of rail lines was the salvage/scrap value of the abandoned INCLINE line. Although the MR&WC had placed a "fair value" of $352,130 on the INCLINE in 1932, the total salvage/scrap value amounted to only $11,787, and which broke down into items such as: 2 Incline cars @ $175 each; 6 waiting shelters, no value; 2317 railroad ties $260; rails $848.

The days dwindle down to a precious few. The final days of rail operations in Duluth were a mixture of reluctance and relief...the end of an era that saw the rapid rise and gradual decline of one of the area's greatest industries, the street railway. From a high of 114 miles of track in 1929, only 60 miles remained in 1939, the final year of rail operations.

b. SUPERIOR

A combination of underfunding, economics, corporate changes, poor track and over-extensions brought about the first, and major, abandonments in Superior following the 1900 merger of properties. Most of the abandoned lines at that time, however, were restored later. These are described in detail in 3.6, 3.7.

The earliest abandonment under DSR management was the short 61ST ST./CENTRAL AVE. line--755 foot, .15 mile line, abandoned in 1902.

In June 1924, the 4th ST. trestle over the Nemadji River on the ALLOUEZ line was declared unsafe for normal operation of street cars. The line was rerouted along 31st. Ave. E., then along 2nd St. to the original loop at 38th St. The 4TH ST. route was abandoned on November 29, 1928.

The Superior Division of DSR had become a deficit operation in 1922, and continued in that unfortunate status thereafter. Even though every possible economy had been implemented, DSR continued to be burdened with losses on its Superior Division operations. On November 5, 1930, legal counsel for DSR petitioned the City of Superior, its Mayor and Common Council, seeking permission, "...to discontinue certain street railway operations..." in Superior, and substitute buses...or whatever mutually agreeable solution to DSR's dilemma. No subsequent action was taken by the Council. DSR counsel met again with Superior officials on January 23, 1931 to review the situation. A public meeting was arranged for January 28, at which it was decided to put the matter to public vote in April. DSR felt that sufficient time had already been given for action, that Superior officials were "dragging their feet" and would not consent to further delays that would come from a public referendum. On May 15, DSR went before the U. S. District Court in Superior requesting this permission.

The hearing was quite lengthy. However, the following observations by Honorable George T. Page, Judge of the Court, seemed pertinent, "The situation that the court has to meet is rather a difficult one. It is a situation that the City of Superior has to meet also, and every other city engaged in disposing of transportation. The whole evidence seems to show that there is nothing in the existing conditions or probable future conditions that would remedy the situation, or that would enable the receiver to recoup the great losses that he would have to take to maintain the operation of those three parts, abandonment of which is asked...I find the facts here show that the whole company is not earning expenses as far as Superior is concerned, and that the number of passengers carried on the lines sought to be abandoned is very small. The testimony seems to show that the losses upon these branches added to the loss of general operation under existing conditions make very serious inroads upon the corpus of the property."

The Court granted permission that day, January 23, 1931, to discontinue rail operations and substitute bus service, effective June 25, 1931, on three rail lines:

The SOUTH SUPERIOR line, single-track with numerous sidings, on Tower Ave. from 21st to 64th Sts. When delivery of replacement buses was delayed, that portion of the line to 48th St. was reopened for six days--September 6-11--to handle Fair Grounds crowds.

The 6TH ST. loop line was reduced from double- to single-track in 1901. The single track on 6th St. from Tower to Lamborn Aves., and on Lamborn from 6th to 3rd Sts. were abandoned.

The BROADWAY ST. line, double-track on Broadway and on Catlin Aves; single- and double-track portions on Winter St.; then single-track on Hill Ave. to the junction with Belknap St. tracks were abandoned.

Trolley wires on the ALLOUEZ line fell during a severe ice storm on March 5, 1935, after which service on 31st St. and on E. 2nd St. to 38th St. was abandoned.

Street paving projects brought about the extensive and final rail abandonments on June 5, 1935; replaced by bus service:

The DULUTH-SUPERIOR-3RD ST.-INTERSTATE line was abandoned, double-track on Main St. from the Bridge approach to Lamborn Ave., across the Lamborn Bridge, Bridge St., Grand Ave., 3rd St., Tower Ave. to Belknap St.

The 21ST ST. line, single-track from Tower Ave. to and through the Grand Ave. loop was abandoned.

The Billings Park line was abandoned, double-track on 21st St. from Tower to Wyoming Aves., then single track to and through the loop in Billings Park.

The car house tracks on 4th St. and on Ogden Ave. were abandoned. At the same time, the car house was converted to a bus garage and shop.

DSR's final rail operations in Superior literally and actually retreated ahead of the concrete mixers. The repaving of Tower Ave. from 3rd to Belknap Streets brought about the forced end of all remaining rail operations.

During the repaving of Tower Ave., a truncated rail service continued on the EAST END line. This, too, ended on June 23.

? ?

3.6a > 3.6b

All car repairs and car and shop operations were moved to the Duluth shops, and the Belknap shop was closed.

4-01 conversion date

dual gauge

affected Belknap St. car house

Superior's final rail operation was on June 24 when car 301 pulled into the Catlin Ave. wye at 1:10 a.m., quietly ending 51 years of street railway operations.

As the end of all street car operations in Superior approached in June 1935, plans were made by the City to provide municipal operation of the replacement bus system. Apparently certain that the plan would be approved, it seems that DSR made no attempt to purchase buses to replace the street cars. A last-minute decision by the city to abandon the plan caused some anxious moments for DSR when a shortage of buses would surely develop.

3.25 GREAT NORTHER RWY., SUPERIOR

Great Northern Rwy's Allouez Yard in Superior handled most of GN's considerable iron ore traffic. New shops, engine house and terminal buildings had been constructed at Bardon Ave., about 1.25 miles from the nearest public transportation, DSR's ALLOUEZ line loop at 38th Ave. and E. 2nd St. A steam switch engine with two passenger cars made regularly scheduled shuttle trips, providing transportation for train and ore dock crews. GN built a street car line to replace the steam train from the DSS&A Rwy. crossing, near the Bay, to the Allouez Yard engine house, a distance of 1.76 miles. The April 24, 1913 Superior EVENING TELEGRAPH reported, "The new trolley line being built by the Great Northern Rwy...will be completed in two or three weeks...The trolley car and other apparatus for the line is under construction at the Twin Cities...All equipment will be owned by the railroad which will also furnish its own power. Regular service will be maintained over the line day and night when it is completed." Twin City Rapid Transit Co.'s last single-truck passenger car #448 was sold to the GN Rwy. in April 1913, for use on this line. A waiting station was built at the "city" end of the line. This operation, using the lone single-truck passenger car, continued until 1927, when the track was removed, and a gasoline-engine-operated car was run on the regular tracks.

3.26. RAIL LINE MILEAGE*

YEAR**	TOTAL MILES	DULUTH	TRACK CHANGES***	PARK POINT	SUPERIOR	TRACK CHANGES***
1883	1.00	1.00	8th Ave. W. to 3rd Ave. E. 1.0			
1884	1.25	1.25	X to 11th Ave. W. .25			
1885	1.67	1.67	X to Garfield Ave. .44			
1886	2.99	2.99	X to 20th Ave. W. .40 X to 13th Ave. E. .92			
1887	3.25	3.25	X to 23rd Ave. W. .26			
1888	4.22	4.22	X to 22nd Ave. E. .80	1.08		MPSR narrow gauge horse car line, Canal to Pine (19th) St. ST 1.08
1889	4.22	4.22	X to 28th Ave. W.		4.88	DCSR narrow gauge horse car line, Tower Ave., 3rd to 21st Sts. ST 1.51; Belknap, Tower to 7th to L to 5th to 25th Sts. ST 3.37
1890	19.40	19.40	Electrification and conversion to double track standard gauge of all horse car lines. West Duluth to 62nd Ave. W. DT 6.0 E. 4th St. to 14th Ave. E. DT 4.1		4.88	Electrification of all horse car lines
1891	20.53	20.53	7th Ave. W. Incline 1.13; MLI/DSR Woodland, 14th Ave. E. to Austin St.		9.39	DCSR 3rd St., Tower to Lamborn Aves. ST .50; Broadway, Tower to Clough Aves. ST .64; Belknap, Tower to 7th to L to 5th to 25th Sts. DT 3.37
1892	28.93	28.93	Garfield Ave., Michigan St. to Bay ST/DT 3.2; Lake Ave. ST/DT .95; W. 4th St., 6th Ave. E. to 5th Ave. W. ST/DT 1.5; E. 4th St. to 27th Ave. E. DT 1.9; 12th Ave. E. ST .28; 26th Ave. W. carhouse, shops, yard 1.3; HIC/DSR Highland Ave.; LR/DSR		18.80	Tower Ave., 3rd to 21st. Sts. DT 1.51; 21st St., Tower to New York Aves. ST 1.36; DCSR Tower Ave., 21st to 28th Sts. DTX 1.00; SRTR Tower Ave., 28th to 61st. Sts. DTX 5.54
1893	28.93	28.93	Lakeside/Lester Park, 22nd to 61st Aves. E. ST 2.0	2.85	26.50	To Oatka (39th St.) STX 1.77 Broadway, Tower to Catlin to Belknap DT 1.79; 3rd St., Tower to Lamborn Aves. DT .50; 21st St., Scranton to Wyoming Aves. DT .69; Tower Ave., 61st to 63rd Sts. STX .16; 61st St. (Central Ave.), Tower to Hughitt Aves. ST .15;

Narrow-gauge horse car line

3.26 RAIL LINE MILEAGE*

YEAR**	TOTAL MILES	DULUTH	TRACK CHANGES***	PARK POINT	SUPERIOR	TRACK CHANGES***
						6th St., Tower Ave. to Lamborn to Bridge St. to Main St. to Connors Point DT 3.66; E. 5th St., 25th to 31st Sts. STX .60
1894	30.60	30.60	Highland Ave. acquired ST 1.9 Endion carhouse abandoned -.2; 12th Ave. E. abandoned -.28			
1895	30.60	30.60				
1896	36.10	36.10	W. 3rd St. to 40th Ave. W. DT 4.3; Duluth-Superior Bridge DT 1.0			
1897	36.10	36.10				
1898	36.10	36.10				SRT Interstate, D-S Bridge to Belknap St., converted to standard gauge
1899	36.10	36.10		2.90		ITC electrification and conversion to standard gauge .05
1900	74.80	48.80	Woodland line acquired DT/ST 5.5; Lakeside line acquired DT/ST 7.0; Morse St. wye.ST .15; 62nd Ave. W. wye ST .1		26.00	Superior lines acquired 26.00
1901	72.20	48.80	61st Ave. E. loop; wyes on Superior St. at 8th Ave. W., 3rd and 23rd Aves. E.		23.40	East End converted to ST standard gauge; Main/Bridge Sts., wye .04; Tower Ave., 28th to 63rd Sts. reduced to ST-2.37; 61st St (Central Ave) abandoned -.15; 6th St. loop reduced to ST -.76; Tower Ave.-Belknap St. wye .04
1902	73.54	49.51	Garfield Ave. DTX .90; Raleigh St. 55th to 62nd Sts. DTX .70; Grand Ave., 39th to 60th Aves. W. STX 1.6; Petre St. abandoned; replaced by Wallace Ave. .3; Michigan St., 13th to 18th Aves. W. abandoned; replaced by tracks on Superior St.; 39th Ave. W. detour		24.03	4th and Ogden loop, carhouse and yard .63; Belknap carhouse abandoned; East End, Tower to 24th Ave. E. DT; Conversion of all remaining track to standard gauge

3.26 RAIL LINE MILEAGE*

YEAR**	TOTAL MILES	DULUTH	TRACK CHANGES	PARK POINT	SUPERIOR	TRACK CHANGES
1903	73.54	49.51	37th Ave. W. spur to NP; 39th Ave. W. detour abandoned; W. 4th St. wye at Mesaba Ave.		24.03	21st St. STX to Billings Park .45; Tower Ave., 63rd.to 64th Sts. STX .08; 31st Ave. E., 5th to 4th Sts. STX and wye .08; 6th St. reduced to ST-.76; Tower Ave. 21st to 28th Sts., reduced to ST-.5; 21st St., Wyoming to New York Aves. reduced to ST-.37; Broadway-Catlin abandoned-2.41
1904	71.05	49.50		3.29	21.55	to 43rd St. STX .39
1905	72.48	50.93	Grand Ave. 47th to 49th Aves., W., DTX .2; Grand Ave. 60th to 71st Aves. W. STX 1.2; Woodland, wye at St. Paul Ave. ST	6.50	21.55	DT entire line
1906	73.27	51.70	57th Ave. W., to Medina St..85		21.57	Tower Ave., (3rd St. wye .02
1907	75.04	53.47	24th Ave. E. DT .6; 8th Ave. W. loop replaced wye; 39th Ave. W. wye,; 12th Ave. W. spur; 34th Ave. W. siding; Highland Ave. passing siding; Garfield/Superior St. wye		21.57	31st. St, 4th to 5th Aves. DT
1908	76.14	53.47	12th Ave. W. spur to rock quarry		22.67	Allouez to 38th Ave. E. ST 1.1
1909	77.99	55.24	Grand Ave. 40th to 57th Aves. W. DTX 1.4; Lakeside/Lester Park 47th to 61st Aves. E. DTX 1.2		22.75	
1910	78.49	54.96	6th Ave. E. tracks moved to 5th Ave. E, -.3		23.53	Tower Ave. 21st to 28th Sts. DTX .7; South Superior siding ST at 8000' (Fairgrounds/46th St.); South Superior sidings at 2000' and 6000' removed
1911	80.43	56.89	Piedmont Ave. 3rd to 10th Sts. ST/DT 1.2; Grand Ave. 57th to 63rd Aves. W. DTX .5; 27th Ave. W. Soo Line RR spur; 57th Ave. W. wye -1		23.54	Belknap St. Soo Line RR spur

3.26 RAIL LINE MILEAGE*

YEAR**	TOTAL MILES	DULUTH	TRACK CHANGES	PARK POINT	SUPERIOR	TRACK CHANGES
1912	82.42	58.88	E. 9th St to 13th Ave. E. ST/DT 1.8; 21st. Ave. W. .55; W. 3rd St. 19th to 21st Aves. abandoned -.4		23.54	
1913	82.47	58.93	39th Ave. W. wye X 600' .1		23.54	Tower Ave.
1914	82.50	58.96		3.6	23.54	Reduced to ST, with passing sidings at 15th, 28th and 37th Sts.
			to 84th STX;		23.54	Belknap & Spruce, Soo Line crossing removed
1915	83.76	60.22	Grand Ave. 63rd to 74th Aves. W. DTX .8; Woodland DTX .5		23.54	
1916	89.19	65.47	Grand Ave. to Morgan Park DT/ST 5.2; 85th Ave. W. spur to NP		23.72	Fair Grounds loop and siding .2
1917	103.88	76.56	Morgan Park DTX 2.0; New Duluth DT/ST 4.2; Kenwood to 115th Ave. E. DT/ST 4.2; 92nd Ave. W. loop; Park Point acquired 3.8	0.0	27.32	Broadway, Tower Ave. to Belknap DT/ST 3.1; 5th St., 25th to 31st Aves. DTX .5
			.03			
1918	104.02	76.70			27.32	Wye at D-S Bridge south approach
1919	104.09	76.77	33rd Ave. W. spur; 85th Ave. W. spur removed		27.32	
1920	104.28	76.77			27.51	Tower Ave. 35th St. passing siding .9 Tower Ave. 58th St. passing siding .9
1921	105.57	76.96	(Kenwood) 12th St. gravel pit spur .2		28.61	21st St., Tower to Grand Aves. ST 1.1
1922	105.83	77.20	Woodland DTX .22		28.63	
1923	107.64	79.01	E. 9th St. DTX; E. 8th St. ST/DTX 1.81		28.63	
1924	109.67	81.04	Kenwood to St. Marie St. DT/STX 2.0		28.63	
1925	109.73	81.04			28.69	24th Ave. E. loop .06
1926	112.36	83.67	Crosley to 52nd Ave. E. DT/ST 2.71		28.69	
1927	112.61	83.92	Armory loop .27		28.69	
1928	113.36	84.67	Woodland to Austin St. DTX .7; Morse St. loop .16; Cleveland St. gravel pit		28.69	

3.26 RAIL LINE MILEAGE*

YEAR**	TOTAL MILES	DULUTH	TRACK CHANGES	SUPERIOR	TRACK CHANGES
1929	113.64	84.84	Aeial Bridge .34; 27th Ave. E. loop .10; 37th Ave. W. wye abandoned -.2	28.80	Allouez relocated from 4th to 2nd Sts.
1930	112.47	83.67	W. 4th St. abandoned -1.24	28.80	21st St. DTX Corning to Oakes
1931	96.90	76.22	Park Point abandoned -3.8; Aerial Bridge abandoned -.34; Lester Park 45th to 61st. Aves E. abandoned -3.1; Lake Ave. reduced to ST -.3	20.68	Broadway abandoned -2.9; Tower Ave. 21st to 64th Sts. abandoned -4.4; 6th St. abandoned -.77; Belknap Soo Line spur abandoned -.20
1932	96.90	76.22		20.68	
1933	96.90	76.22		20.68	
1934	90.50	69.83	Piedmont abandoned -1.82; E. Superior St., 3rd to 24th Aves. E. and Armory loop abandoned -4.05; Kenwood 12th St. and Cleveland spurs and 33rd Ave. W spurs abandoned -.3	20.67	
1935	65.98	65.98	Garfield Ave. abandoned -3.85	.00	All remaining lines abandoned
1936	63.71	63.71	2nd Ave. E. .35; Kenwood cut back to 13th St. -2.31; Superior St., 2nd to 3rd Aves. E. and 3rd Ave. E. wye abandoned -.3; 12th Ave. W. wye abandoned -.1		
1937	61.15	61,15	New Duluth cut back to cement plant -1.47; remainder of Kenwood abandoned -.71		
1938	60.52	60.52	Lake Ave. and Morse St. loop abandoned -.63		
1939	.00	.00	All remaining lines abandoned		

*A detailed chronology for the early (1883-89) years seems not to be recorded by DSR. Some inconsistencies therefore, result in rconciling known track changes with official annual track mileage.

**Changes are as of year end.

***An official chronology of Superior track mileages seem not to be recorded prior to the 1900 merger.

ST = single track DT = double track X = extension

3.27 RAIL LINES: A CHRONOLOGY OF FIRST TRACKS(FT), EXTENSIONS(EX), CHANGES(CH), AND ABANDONMENTS(AB)

REFERENCE	DATE		NARROW GAUGE HORSE CAR LINES
2.1	Oct 25 1881		Duluth Street Railway (DSR) incorporated.
2.1	Sep 11 1882	FT	Construction began on first track: 8th Ave. W. to 3rd Ave. E. on Superior St.; single track narrow gauge; interrupted during the winter.
2.1	May 14 1883	FT	Construction resumed.
2.1	July 6 1883		Horse car operation began: 8th Ave. W. to 3rd Ave. E. on Superior St., single track with passing sidings.
3.1	Feb 25 1884		Douglas County Street Railway (DCSR) "organized".
3.1	Apr 24 1884	FT	DCSR incorporated. Construction began on Superior's first track; FT single track 3'6" narrow gauge from 25th Ave. E., west on 5th St. to 23rd Ave. E., north to Bay St. (2nd St.), "northwesterly to the dock area at or near Winter St., 2.6 miles". Sleighs operated during the winter.
2.2	June 24 1884	EX	Single track to 11th Ave. W. on Michigan St.
2.2	1885	EX	Single track to Garfield Ave. on Michigan St.
2.2	Spring 1886	EX	Single track to 13th Ave. E. on Superior St.
2.2	1886	EX	Single track to 18th Ave. W. on Michigan St., north to Superior St., then west to 20th Ave. W. on Superior St.
2.4	Aug 18 1886		Appleton, WI's first test hydro-electric street car operation in U.S.
2.21	Dec 27 1886		Park Point Street Railway incorporated
2.21	Apr 1887		Minnesota Point Street Railway (MPSR) incorporated.
2.21	June 23 1887		MPSR franchised by Village to build one mile of track.
3.1	Aug 27 1887		DCSR horse car franchise operation began on 5th St. from 22nd Ave. E. (Court House), to Bay and Winter Sts.
2.2	Oct 31 1887	EX	Single track to 23rd Ave. W.
2.2	1888	EX	2nd track added between 11th and 13th Aves. W.
2.4	Feb 2 1888		Richmond, VA., first successful electric street car operation in U.S.
2.2	May 1888	EX	Shuttle operation on E. Superior St., 14th to 22nd Aves. E.
2.21	Fall 1888	FT	MPSR reported 1.4 miles of narrow gauge, single track constructed, FT on Lake and Minnesota Aves. From the Aerial Bridge (7th St.) to 19th St. There seems not to have been any operation of horse cars.
2.24	Dec 12 1888		DULUTH INCLINE RAILWAY (DIR) privately organized.
2.2	Apr 1889	EX	Single track extension to 28th Ave. W. on Superior St.
2.5	Apr 29 1889		E. 4th ST. COUNCIL ordered the building of the E. 4th ST. line. Construction began July 5.
2.2	May 1889	EX	Single track extension to 22nd Ave. E. on Superior St.
3.2	July 7 1889		DCSR received a street railway operations franchise.
2.24	Sep 8 1889	FT	DIR began 1 1/2 miles of West Duluth flat land operation along Polk St.

2.8	Sep 18 1889	FT	Highland Improvement Co. (HIC) incorporated and announced plans to build tracks in Duluth Heights.
2.2	Nov 1889	EX	Single track extension to 28th Ave. W. on Superior St.
3.2	Dec 23 1889		DCSR operations: single track operations from 25th Ave. E., west on E. 5th St., 6th Ave. E., to 6th St., Belknap St. to Tower Ave., and on Tower Ave. 3rd to 21st Sts.
2.24	Jan 16 1890		DIR Reorganized as Duluth Belt Line Railway (DBLR).
2.7	Feb 20 1890		WOODLAND Motor Line Improvement Co. (MLI) incorporated, with tentative plans for a Woodland steam "Motor" line.
2.7	Feb 26 1890		WOODLAND, MLI announced plans to build an electric line - in conjunction with DSR- instead of a "motor" line.
2.7	Apr 5 1890		WOODLAND, Duluth Council ordered a line built under a DSR-MLI joint franchise.
2.1	Apr 22 1890		City Ordinance directed DSR to build and operate street railway from 28th Ave.W. to 22nd Ave. E.
2.3	Apr 28 1890	CH	DSR franchised to convert to all-electric operation. All narrow-gauge tracks upgraded, bonded and converted to standard gauge and double tracked. Trolley wire, feeder lines and poles installed.
2.4	June 30 1890	EX	WEST DULUTH line extended double track on Superior St. to 21st Ave. W.
2.21	July 1890		PARK POINT line first operations of horse cars. Extent of service not known.
3.2	July 1 1890	CH	DCSR began conversion of some horse car lines to dual gauge and all-electric operation. Trolley wire, feeder lines and poles installed.
2.24	July 8 1890	FT	Incline operation began on DBLR, standard gauge, single track, 3 miles long, including a 7,000-foot incline along Keene Creek to Purcell Ave. on Vinland St.
2.2	Sep 3 1890	CH	EAST END line: bridge built on E. Superior St. replacing gap over Chester Creek between 13th and 14th Aves. E.
2.4	Nov 8 1890	CH	ELECTRIFICATION. Electric cars began operating in Duluth, double track 8th Ave. E. to 24th Ave. W. on Superior and Michigan Sts.
2.5	Dec 2 1890	CH	E. 4th St. line built. 3rd Ave. W., Superior to 2nd Sts., east to 6th Ave. E., north to 4th St., east to 10th Ave. E.
2.4	Dec 21 1890	EX	Superior St. line extended to 28th Ave. W. and to 22nd Ave. E.
2.5	Dec 21 1890	EX	E. 4th St. line extended to 14th Ave. E.
2.7	Fall/winter 1890		
	Spring 1891	FT	WOODLAND line, spasmodic construction.
3.4	Jan 1 1891	FT	3rd St. line, single track. Tower to Lamborn Aves.
2.5	Feb 1 1891	EX	E. 4th St. line, extended double track to 19 1/2 Ave. E.
3.4	Feb 1 1891	FT	BROADWAY (10th St.) line, single track, Tower to Clough Aves.
2.7	Apr 20 1891		WOODLAND line, test car operations began.
2.7	Apr 28 1891	FT	WOODLAND line, single track on Woodland Ave. from E. 4th to Austin Sts. Built, owned and leased by MLI Co. to DSR.

3.6	May 8 1891	EX	TOWER AVE. line, double track on Tower Ave., 3rd to Belknap Sts.
2.21	June 1891		PARK POINT line, DSR sold $618 worth of "steel rails" to MPSR.
2.6	Summer 1891	FT	WEST DULUTH line, preparations were made for extending the WEST DULUTH line; this included the building of trestles/bridges over ravines/creeks at 37th, 40th, 43rd & 46th Aves. W. on Oneota St., a trestle on Sutphin St. over the NP railway, and a 386' viaduct over the DW&P railway at 49th Ave. W.
2.7	Jun 1891		7th AVE. W. INCLINE construction began.
2.5	Sep 1891	EX	E. 4th St. line, double track to 27th Ave. E.
3.8	Nov 6 1891	FT	BELKNAP ST. line, double track, Tower Ave. to Catlin St.
2.6	Nov 27 1891		WEST DULUTH line, operation began to 28th Ave. W.
2.7	Nov 29 1891		7th AVE. W. INCLINE trial operation.
2.7	Dec 2 1891		7th AVE. W. INCLINE scheduled operation began.
2.6	Dec 1891	EX	WEST DULUTH line, double track on Superior, Sutphin (Jenswold), Oneota, Ramsey Sts., 55th Ave. W. (Central Ave.), Raleigh St. to 57th Ave. W., then single track to 62nd Ave. W.
2.23c	1891	FT	12th AVE. E., single track between E. Superior and E 4th Sts.
2.7	Dec 1 1891	CH/AB	WOODLAND line rerouted, double track from 27th Ave. E. and 4th St., Wallace Ave., St. Marie St. to Woodland Ave. Former route on Woodland Ave. from E. 4th St. abandoned.
2.8	Dec 2 1891	FT	7th AVE. W. INCLINE operation began.
3.12	1891-1892	FT	21st St. line single track, narrow gauge, Tower to New York Aves.
3.8	1891-1892	EX	EAST END line, double track, narrow gauge, Belknap St. from Tower Ave. to E. 7th St., 8th Ave. E., (L Ave.), E. 5th St. to a loop at 24th Ave. E.
2.21	Sep 25 1892	FT	PARK POINT line, MPSR reported 3 miles of standard gauge track in operation, extending to 39th St. on Minnesota Ave.
3.9	Aug 1892	EX	TOWER AVE., double track extended Belknap to 28th Sts.
3.6	Sep 10 1892		Superior Rapid Transit (SRT) acquired DSR.
3.11	Sep 14 1892	EX	SOUTH SUPERIOR line, double track 28th to 61st Sts.; now 4.28 miles.
2.12	Sep 25 1892	FT	GARFIELD AVE. line, double track, Michigan St. to the Bay, providing a ferry boat connection to SRT at Tower Ave. slip.
2.8	Sep 27 1892	FT	HIGHLAND AVE. line built jointly by Highland Improvement Co. (HIC) and DSR.
2.11	Oct 1892	FT	LAKE AVE. line, double track Superior to Buchanan Sts., single track to the Canal.
2.8	Oct 3 1892		HIGHLAND AVE. line, leased to DSR by HIC.
2.13	Nov 4 1892	FT	WEST 4th ST. line, double track 6th Ave. E. to Lake Ave., single track to 5th Ave. W.
2.10	Dec 17 1892	FT	LESTER PARK line, 22nd to 60th Ave. E., double track to 47th Ave. E., single track, upper side, east of 47th St. Built, owned and leased by Lakeside Railway Co. (LRC) to DSR.
2.21	June 3 1892	FT	PARK POINT line, MPSR began construction.
3.12	1890-1892	FT	BILLINGS PARK line, single track, narrow gauge, Tower to New York Aves on 21st St. line.

3.8	Late 1892 - Early 1893	EX	EAST END line, single track on 5th St., 25th to 31st Aves. E.
3.12	Late 1892 - Early 1893	EX	BILLINGS PARK line, double track to Wyoming Ave.
3.11	Early 1893	EX	SOUTH SUPERIOR line, single track across NP tracks to 63rd St.
3.11	Early 1893	EX	61st ST./CENTRAL AVE. line, single track, Tower to Hughitt Aves.
3.14	Jan 10 1893	EX	BROADWAY line, double tracked to Catlin Ave., South to Belknap St.
3.15	Jan 29 1893	EX	6th ST. line, double track on 6th St., Tower to Lamborn Aves., to 3rd St.
2.12	May 1893	EX	DSR build dock and a waiting station on Rice's Point at the foot of Garfield Ave.
3.10	May 7 1893		DSR & SRTR began free ferry boat operations across Bay. Boy with platforms, dock and shelters at the foot of Garfield Ave.
3.4	May 7 1893	EX	DULUTH-SUPERIOR INTERSTATE line, converted to double track, extended double track north on 3rd St., Lamborn Ave., Bridge St., across Lamborn Ave. Bridge, then along Main St. to Duluth-Superior Bridge.
2.10	Winter 1893 June 1894		DULUTH-SUPERIOR INTERSTATE line, tow cables shuffled a barge/sled across frozen Bay ice. > Duluth-Superior Traction incorporated
2.23c	May 22 1894	AB	12th AVE. E. line, abandoned.
2.8	July 12 1894		HIGHLAND AVE. line acquired by DSR from HIC.
3.10	Winter of 1894, 95, 96		Temporary winter service established across the Bay, narrow gauge single track on timber pilings from Connor's Point to Rice's Point.
2.14	July 1 1896	EX	WEST 3rd ST. line, double track from 13th Ave. W. and Michigan St., to Superior St., to Garfield Ave., up Piedmont Ave. to 3rd St., west on 3rd St. to 40th Ave. W.
2.12	July 13 1897		Duluth-Superior Bridge opened to foot traffic.
2.12	Sep 1 1897	FT	DULUTH-SUPERIOR INTERSTATE line, double track on Bridge and both approaches.
2.21	1898		City of Duluth establishes ferry boat service across Canal.
2.21	May 19 1898	CH	PARK POINT properties auctioned.
3.10	Sep 20 1898	CH	DULUTH-SUPERIOR INTERSTATE line in Superior converted to standard gauge.
2.21	Nov 16 1898	CH	PARK POINT properties became Interstate Traction Co. (ITC).
3.15	Sep 28 1898	CH	6th ST. line converted to standard gauge.
2.12-3.10	Mar 28 1899	CH	DULUTH-SUPERIOR INTERSTATE line, full inter-city service began.
2.21	June 20 1899		PARK POINT line, electrified and converted to standard gauge.
2.6	July 1 1899	FT	WEST DULUTH line, wye installed at 62nd Ave. W.
2.11	July 1 1899	FT	LAKE AVE. line, wye installed at Morse St.
3.6	Aug 13 1900		All Superior lines acquired by DSR from SRTR.
2.10	Sep 1 1900	EX	LRC acquired by DSR from Lakeside Rwy.
3.6	1901	AB	SOUTH SUPERIOR line reduced to single track.
3.15	1901	AB	6th ST. line reduced to single track.
2.6	Jan 1901	FT	WEST DULUTH line, wye installed at 37th Ave. W. and Oneota St. to NP.
2.9	Jan 1901	FT	EAST END line, wye installed at 3rd Ave. E. and Superior St.
2.10	Early 1901	FT	LESTER PARK line track extended across Lester River to a loop at 61st Ave. E.

3.11	Spring 1901	AB	SOUTH SUPERIOR line reduced to single track south of 28th St.
2.8	May 8 1901	AB	7th AVE. W. INCLINE, fire destroyed west car, power house, controls and pavilion.
2.12	Summer 1901	CH	Double track installed on W. Superior St., 14th to 18th Aves. W.
3.10	June 20 1901	CH	DULUTH-SUPERIOR INTERSTATE line wye built at Main and Lamborn Aves.
2.7	July 1 1901	CH	WOODLAND line, properties acquired by DSR from MLI.
2.23	Aug 1901	FT	Wye installed at 8th Ave. W. and Superior St.
3.8	Oct 5 1901	CH	EAST END line, converted to single track standard gauge, 25th to 31st Aves. E.
2.10	Oct 31 1901	FT	LESTER PARK line, first off-street loop at 61st Ave. E.
3.14	Nov 1 1901	AB	BROADWAY line abandoned.
3.11	Dec 1 1901	AB	21st ST. line, Wyoming to New York Aves. Reduced to single track.
3.8	1902	EX	EAST END line, double track to 25th Ave. E. then single track to 31st Ave. E.
2.9	Summer 1902	FT	EAST END line, wye at 23rd Ave. E.
2.8	Jan 1 1902	CH	7th AVE. W. INCLINE, restored, one self-propelled car only, on west track, counter balance on east track.
2.12	June 1902	CH	GARFIELD AVE. line, viaduct south of Superior St. over railroad tracks.
2.12	June 1902	AB	Tracks removed on Michigan St. between 13th Ave. W. and Garfield Ave.
3.12	June 26 1902	EX	BILLINGS PARK line, extended single track New York to Park Aves.
3.11	July 8 1902	EX	SOUTH SUPERIOR line, all tracks changed from narrow to standard gauge.
3.11	July 8 1902	AB	SOUTH SUPERIOR and 61st ST. lines abandoned.
2.6	July 9 1902	CH	WEST DULUTH line, construction began on Jenswold St. viaduct/underpass; began 39th Ave. W. detour; Grand Ave. to Oneota St.
3.12	Aug 1902	CH	BILLINGS PARK line. DSR acquired right-of-way through park.
2.6	Oct 1902	EX	WEST DULUTH line, double track extension on Raleigh St., 58th to 62nd Aves. W.
3.14	Nov 1 1902	AB	BROADWAY line abandoned.
3.8	Dec 19 1902	FT	4th & Ogden, loop, car house and yard built. AB Catlin and Belknap facilities abandoned.
3.8	Dec 19 1902	AB	Catlin/Belknep facilities abandoned.
2.13	1903	CH	W. 4th ST. line, wye added at Mesaba Ave. (5th Ave. W.).
3.11	1903	FT	TOWER AVE. double track extended Belknap to 21st Sts.
3.11	1903	EX	SOUTH SUPERIOR line extended, single track 63rd to 64th Sts.
3.15	1903	AB	6th ST. line, Tower to Lomborn Aves., to 3rd St. reduced to single track.
2.6	Apr 11 1903	CH	WEST DULUTH line, Jenswold St. project finished, 39th Ave. W. detour discontinued.
3.8	May 1903	EX	EAST END line extended on 31st Ave. E., 5th to loop at 4th Sts.
3.11	May 21 1903	EX	SOUTH SUPERIOR line extended, single track 63rd to 64th Sts.
3.12	July 1903	EX	BILLINGS PARK line extended, single track, New York Ave. to loop in park.
2.12	Aug 1903	FT	GARFIELD AVE. line, double track, Superior St. to the Bay.

2.14	Aug 15	1903	EX	GRAND AVE. line extended single track (south side of street) 40th to 60th Aves. W.
2.21	June	1904	EX	PARK POINT line extended 39th to 43rd Sts.
2.9	Fall	1904	CH	EAST SUPERIOR ST. line, wye moved from 23rd to 24th Aves. E.
2.7	Mar	1905	FT	HUNTERS PARK line, wye added at St. Paul Ave.
2.21	May 5	1905	CH	PARK POINT line, Aerial Bridge began operations.
2.14	Oct 1	1905	EX	GRAND AVE. line, single track extension 60th to 71st Aves. W., and passing track added 47th to 49th Aves. W.
2.21	Apr	1905	CH	PARK POINT line, converted to double track.
2.7	Aug	1905	FT	WOODLAND line, loop added at Austin St.
2.21		1906		PARKPOINT line, new car house, shops and offices 19th St.
	Apr 18	1906		San Francisco earthquake destroyed most street car lines.
2.12	Aug 11	1906	CH	DULUTH-SUPERIOR BRIDGE draw span knocked into Bay. Ferry service substituted on Interstate line until September 1908.
2.12	Aug	1906	FT	GARFIELD AVE. line, Arthur Ave. loop.
2.15	Oct 15	1906	FT	57th AVE. W. line, single track, Grand Ave. to Medina St.
2.14		1907	FT	GRAND AVE. line, wye at 39th Ave. W.
2.8		1907	FT	HIGHLAND line, 362 feet siding at 355 feet south of Arlington Ave.
2.8		1907	FT	HIGHLAND line, passing track between 13th and Bench Sts.
2.22	Spring	1907	CH	8th AVE. W., loop replaced wye.
2.22	Apr 27	1907	FT	Garfield Ave. and Superior St., wye added.
2.22	June 5	1907	FT	WEST DULUTH line, ball park siding at 34th Ave. W.
2.7	Aug 19	1907	FT	WOODLAND line, 24th Ave. E., between Superior and 4th Sts.
3.13	Nov 1	1907	FT	ALLOUEZ line, single track on 4th St. from 31st (Robertson) to 38th (McBain Aves. E. to 2nd St., 31st Ave. E. double track 5th to 4th Sts.
	Feb 22	1908		General Offices moved to 27th Ave. W.
2.23	Apr	1908	FT	12th AVE. W. wye extended along Superior St. to a rock quarry.
2.11	Apr	1908	FT	LAKE AVE line. Morse St. track extended to lake shore.
2.12	Sep 24	1908	CH	DULUTH-SUPERIOR BRIDGE repaired/reopened; interstate rail service restored.
	Oct 1	1908		Henry Ford introduced the "Model T". Retail price $825.
2.10		1909	FT	LESTER PARK line, double track extended 47th to 61st Aves. E.
	June 19	1909	FT	Tracks installed in "West Yard", 27th to 28th Aves. W.
2.17	June 13	1909	CH	Double tracks on 5th Ave. E. replaces single track on 6th Ave. E., 2nd to 4th Sts.
2.13	Aug 18	1909	FT	W. 4th ST. line, double track extended 5th to 2nd Aves. E.
2.24	Aug 21	1909	AB	Duluth Belt Line Rwy reduced to 1 1/2 mile incline portion.
2.14	Oct	1909	FT	GRAND AVE. line double track extended 40th to 57th Aves. W.
2.16	Jun 1	1910	FT	PIEDMONT AVE. line, 3rd St. to loop at 23rd Ave. W. and 10th St.
3.11	June 1	1910	EX	TOWER AVE. line, double track extended 21st to 28th Sts.

2.23		1911	FT	Spur track and Soo Line RR interchange at 27th-28th Aves. W.
3.8	Mar 17	1911	FT	EAST END line, 500' spur track south of Belknap St., adjacent to Soo Line tracks.
3.11	Summer	1911	CH	SOUTH SUPERIOR line, single track south of 28th St. re-laid, and passing tracks eliminated at 2,000 and 6,000 feet south of 28th St.; siding installed at 8,000 feet (46th St.).
2.8	May 14	1911	AB	7th AVE. W. INCLINE, single car operation terminated.
2.8	June 10	1911	CH	7th AVE. W. INCLINE, two-car operation began.
2.14	July	1911	FT	GRAND AVE. line, double track extended 57th to 62nd Aves. W. wye added at 57th Ave. w. and Grand.
2.14	May 1	1912	FT	GRAND AVE. line, 21st Ave. W. double track. Superior to 3rd Sts.; AB W. 3rd St. 19th to 21st Aves. W. abandoned.
2.14	July 15	1912	FT	GRAND AVE. line, 39th Ave. W. wye extended 600 feet north.
2.17	Nov 1	1912	FT	E. 9th ST. line, double track 5th Ave. E. and 4th St. to 5th St., to 6th Ave. E., to 7th St. to 7th Ave. E., to 9th St., to 9th Ave. E. single track to 13th Ave. E. loop.
2.17	Mar	1913	FT	E. 9th ST. line, gravel pit spur north side of E. 9th St., between 8th and 9th Aves. E.
2.21	Summer	1914	CH	PARKPOINT, Lake Ave. reduced to single track.
3.8	Dec 17	1914	AB	Soo Line RR crossing removed at Spruce Ave. on Belknap St.
2.4	July	1915	AB	5th Ave. W. and Superior St., cross-over removed. Last cross-over in Duluth.
2.21	Sep	1915	AB	PARKPOINT line Minnesota Ave. reduced to single track, full length passing sidings at 15th, 28th and 37th Sts.
2.7	Oct	1915	FT	WOODLAND line, double track extended 2,100' north from Stornaway St. (up Woodland hill).
2.19	Oct	1915	FT	GRAND AVE. line, extended double track 63rd to 71st Aves. W. with loop at 71st Ave. W.
2.19	Nov	1915	FT	GRAND AVE. line, extended double track 71st to 74th Aves. W., then single track to 84th Ave. W.
2.22		1916	AB	11th Ave. W. car house and tracks removed.
3.11	June	1916	FT	SOUTH SUPERIOR line, 950' double track extension and loop at Fair Grounds.
2.19	Jun 12	1916	CH	MORGAN PARK line extended partially double track to Morgan Park loop, except single track portions 74th to 82nd, 83rd to 92nd and A to E Aves. On 4th St. (88th Ave. W.) temporary spur to Northern Pacific tracks at 85th Ave. W.
3.8		1917	FT	EAST END line, double track extended 26th to 31st Ave. E.
2.21	Mar 16	1917		PARK POINT line, service temporarily suspended by deep drifted snow.
2.10	Jun 27	1917	FT	EAST END line, 45th Ave. E. wye.
3.14	Jul 1	1917	FT	BROADWAY line from Tower Ave., Broadway, Winter St., Hill Ave. to Belknap St., double track except single track sections on Winter St. and on Hill Ave.
2.21	Jul 1	1917		PARK POINT line, interim operation, CANAL to 43rd St. assumed by DSR.
2.20	Jul 25	1917	FT	MORGAN PARK line, 600' spur track on 85th Ave. W. to NP abandoned February 19, 1918.
2.21	Aug 25	1917		PARK POINT line. DSR acquired Park Point Traction Co.

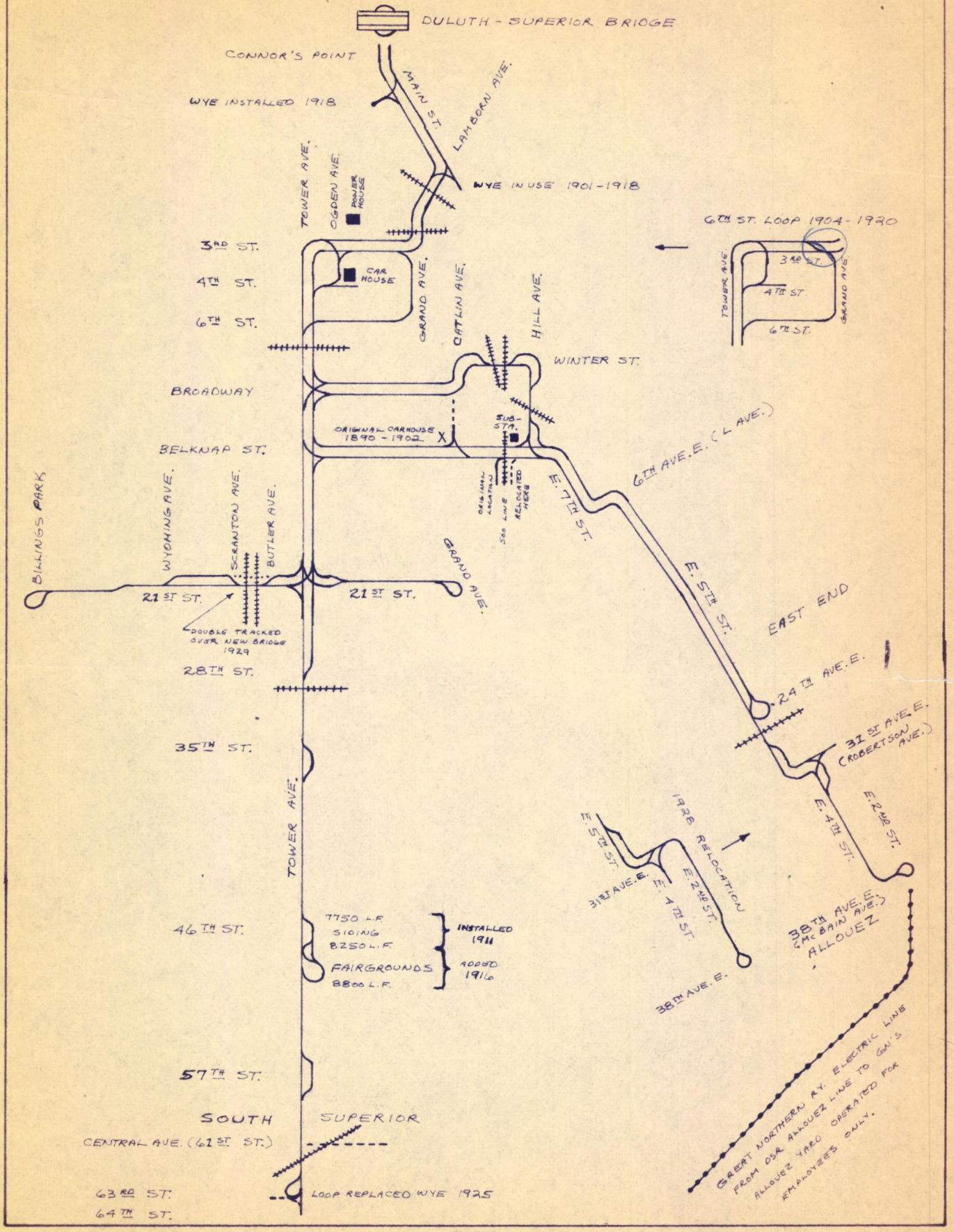
2.21	Sep 1	1917		PARK POINT line. Full operation begun by DSR.
2.19	Oct	1917		MORGAN PARK line, remaining portions of single track converted to double track.
2.18	Aug	1917	FT	KENWOOD AVE. line, double track 7th Ave. and E. 9th St. to 11th St., to Kenwood Ave., to 12th St., single track to loop at 11th Ave. E. and 14th St.
2.19	Nov	1917	EX	GRAND AVE. line, loop and substation at 92nd Ave. W.
2.24	Dec 7	1917	AB	Duluth Belt Line Rwy. sold for scrap.
2.20	Jan 1	1918	FT	GARY-NEW DULUTH line, double track from Morgan Park loop to DM&N overpass on Commonwealth Ave., single track to McCuen St. wye, passing track between Gary and House Sts.
3.15	Feb	1918	CH	6th St. tracks modified for clock-wise operation.
2.12	Oct 12	1918	CH	DULUTH-SUPERIOR INTERSTATE line, Duluth approach to Bridge burned by forest fire.
3.10	Oct 24	1918	FT	DULUTH-SUPERIOR INTERSTATE line, wye at Superior approach to Bridge.
2.12	Nov 7	1918	CH	DULUTH-SUPERIOR INTERSTATE line, one track restored on Duluth approach.
2.12	Nov 20	1918	CH	DULUTH-SUPERIOR INTERSTATE line, second track restored on Duluth approach.
2.22		1919	FT	WEST DULUTH line, spur track to DM&N tipple at 33rd Ave. W. and Superior St.
2.19	Feb	1919	AB	MORGAN PARK line, 85th Ave. W. spur abandoned.
2.10		1920	AB	LESTER PARK line, Lester River spur abandoned.
	Apr	1920	AB	E. 9th St. line, gravel pit spur and pit abandoned.
3.11	Jul 8	1920	FT	SOUTH SUPERIOR line, passing sidings at 35th to 37th Sts.
3.18	Dec 1	1920	FT	First electric track switch, east-bound at 3rd Ave. W. and Superior St.
2.1	Apr 28	1921		Duluth Franchise surrendered.
2.1	May 1	1921		Operations in Duluth began under new state law.
	May	1921	FT	KENWOOD AVE. line, spur to gravel pit at 12th St.
3.16	Jan 1	1922	FT	21st ST. line, single track Tower Ave. to loop at Grand Ave.
2.7	Jul	1922	FT	WOODLAND AVE. line, double track extended to top of Hartley (Dairy) Hill; single track moved to east side of Avenue.
2.17	Aug	1923	FT	E. 9th ST. line, double track extended 9th to 13th Aves. E.
2.17	Sep 1	1923	FT	E. 9th/E. 8th ST. lines extended from 13th Ave. E., across Chester Creek Bridge to 19th Ave. E. on E. 8th St., then single track to a loop at Kent Rd.
2.17	Oct	1923	FT	Wye at 7th Ave. E. and 9th St.
2.18	May	1924	FT	KENWOOD AVE. line, double track extended to 14th St.
3.18	June	1924	AB	ALLOUEZ line, poor condition forced closing of 4th St. Bridge to street cars.
2.18	Sep 1	1924	FT	KENWOOD AVE. line, double track extended to Allen St., single track then extended east side of street, to loop at St. Marie St.
3.10	Nov 21	1924		DULUTH-SUPERIOR INTERSTATE BRIDGE line, bridge damaged by steamer Merton S. Farr; temporary service disruptions.
3.10	Dec 19	1924		DULUTH-SUPERIOR INTERSTATE BRIDGE line, bridge damage repaired, service restored.

3.11		1925	FT	SOUTH SUPERIOR line, loop replaced wye at 63rd St.
3.8	Jul	1925	FT	EAST END line, loop at 24th Ave. E.
2.21	Oct 1	1926	FT	CROSLEY line, double track on 45th Ave. E. from Superior St. to Crosley Ave., single track to loop at 52nd Ave. E. and Glendale St.
2.9	Jun 2	1927	FT	ARMORY, loop track, double track on Jefferson St., single tracks on 13th and 14th Aves. E.
	May	1928	FT	KENWOOD Ave. line, spur track and gravel pit at Cleveland St.
2.7	Jul	1928	FT	WOODLAND line, double track extended to Austin St. loop.
2.11	Aug	1928	FT	LAKE AVE. line, Morse St. wye extended to and on S. 1st Ave. E., then U. S. Engineers to Lake Ave.
3.13	Oct 31	1928	AB	ALLOUEZ line, 4th St. route abandoned.
3.13	Nov 29	1928	FT/CH	ALLOUEZ line, double track on Robertson Ave. (31st Ave. E.) from E. 4th to E. 2nd Sts., then east on E. 2nd St. to original loop at 38th Ave. E.
2.23		1929	AB	WEST DULUTH line, 34th Ave. W., ball park siding abandoned.
2.23	Jul	1929	AB	WEST DULUTH line, 37th Ave. W., wye and NP spur abandoned.
2.23	Aug	1929	CH	WEST DULUTH line, 32nd Ave. W., loop replaced wye.
2.11	Aug	1929	AB	LAKE AVE. line, final trips over Aerial Bridge. Passengers thereafter used City-operated ferry boats temporarily to cross Canal.
2.11	Aug	1929	AB	LAKE AVE. line, Morse St. wye removed.
2.5	Nov 9	1929	FT	E. 4th ST. line, loop at 27th Ave. E.
3.12	Jan	1930	CH	BILLINGS PARK line, extension of 21st St. bridge from Corning to Oakes Aves. Replaced NP and DSS&A level grade crossings.
2.21	Jan 10	1930	CH	Pedestrians permitted to walk across the yet-unfinished Lift Bridge span.
2.21	Mar 12	1930	FT	PARK POINT line, through operation began on the double-track span and both approaches of the Aerial Lift Bridge.
	May 19	1930	FT	Pull-in track installed through west yard at 27th-28th Aves. W.
				DULUTH reached maximum tracks: 84.84 miles.
2.13	Jul 24	1930	AB	WEST 4th ST. line abandoned. First line abandoned in Duluth.
2.21	Jun 15	1931	AB	PARK POINT line, including tracks on Aerial Lift Bridge, abandoned south of Morse St. loop.
3.15	Jun 25	1931	AB	6th ST. line abandoned.
3.14	Jun 25	1931	AB	BROADWAY line abandoned.
3.11	Jun 25	1931	AB	SOUTH SUPERIOR line abandoned south of 21st St.; temporary restoration of service to 48th St. (Fairgrounds) September 6th to 11th.
2.11	Jul 10	1931	CH	LAKE AVE. line, reduced to single track, Michigan to Sutphin Sts.
2.10	Aug 26	1931	AB	LESTER PARK line abandoned, 45th to 61st Aves. E. Replaced by trolley buses on October 4th.
3.8	Dec	1931	AB	EAST END line, Spruce Ave. spur (Soo Line spur) abandoned.
2.18	Nov	1933	AB	KENWOOD line, 12th St. and Cleveland St. gravel pit spurs abandoned.
2.16	May 10	1934	AB	PIEDMONT AVE. line abandoned. Trolley buses substituted August 5th.

2.9	Jul 27 1934	AB	EAST END line abandoned, 3rd to 24th Aves. E. and ARMORY loop. Trolley buses substituted August 5th.
2.22	Oct 1 1934	CH	CROSLEY AVE. line, cross-over installed on 45th Ave. E. near north side of Superior St. to facilitate use of double-end shuttle cars.
3.13	Mar 5 1935	AB	ALLOUEZ line abandoned.
3.12	Jun 5 1935	AB	BILLINGS PARK line abandoned.
3.16	Jun 5 1935	AB	21st ST. line abandoned.
3.10	Jun 5 1935	AB	DULUTH-SUPERIOR INTERSTATE line abandoned.
2.12	Jun 5 1935	AB	DULUTH-SUPERIOR INTERSTATE GARFIELD AVE. line abandoned.
3.8	Jun 23 1935	AB	EAST END line abandoned.
2.23d	1936	AB	33rd Ave. W. and Superior St. spur abandoned.
2.23b	Jun 1936	AB	12th Ave. W. wye and spur abandoned.
2.18	Aug 31 1936	AB	KENWOOD AVE. line abandoned.
2.9	Sep 14 1936	AB	E. Superior St., 2nd to 3rd Aves. E. and 3rd Ave. E. wye abandoned.
2.23g	Nov 12 1936	FT	2nd Ave. E. double track Superior to 2nd St., replaces Sep. 14 abandonment.
2.18	Dec 1 1936	CH	KENWOOD Ave. line, temporary rail service restored 9th to 13th Sts. (see also 2-21-37).
2.18	Feb 21 1937	AB	KENWOOD AVE. line. abandoned.
2.20	May 5 1937	AB	GARY-NEW DULUTH line, abandoned.
2.20	Jun 6 1937	CH	GARY-NEW DULUTH line, temporarily restored from Morgan Park loop to DM&IR underpass wye.
2.11	Apr 1938	AB	LAKE AVE. line and Morse St. loop abandoned.
	Apr 12 1939		Minnesota RR and Warehouse Commission authorized abandonment of all rail operations in Duluth.
2.6	Mar 13 1939	AB	WEST DULUTH line, abandoned, authorized.
2.15	May 2 1939	AB	57th AVE. W. line, abandoned.
2.7	Jul 8-9 1939	AB	WOODLAND line and St. Paul Ave. wye abandoned.
2.22	Jul 8-9 1939	AB	CROSLEY line abandoned.
2.5	Jul 8-9 1939	AB	E. 4th ST. line abandoned.
2.17	Jul 8-9 1939	AB	E. 9th and E. 8th STS. line abandoned.
2.14	Jul 8-9 1939	AB	GRAND AVE/MORGAN PARK lines and 71st and 92nd Aves. loops abandoned.
2.20	Jul 8-9 1939	AB	GARY-NEW DULUTH line abandoned.
2.8	Sep 4 1939	AB	7th AVE. W. INCLINE abandoned.
2.8	Sep 4 1939	AB	HIGHLAND AVE. line and car barn and shop at W. 8th St. abandoned. This was the last rail operation in Duluth.
	Nov 4 1939		Electric trolley bus operations began on WOODLAND line and on W. 3rd ST.-GRAND AVE. line to 64th Ave. W.

DULUTH STREET RAILWAY

SUPERIOR (WISCONSIN) DIVISION



3.29

Dave

Schematic Map of Rail Line Extension Dates

(not to scale) Heavy lines show original horse car lines, and which, for the most part, become the initial electrifications

Duluth

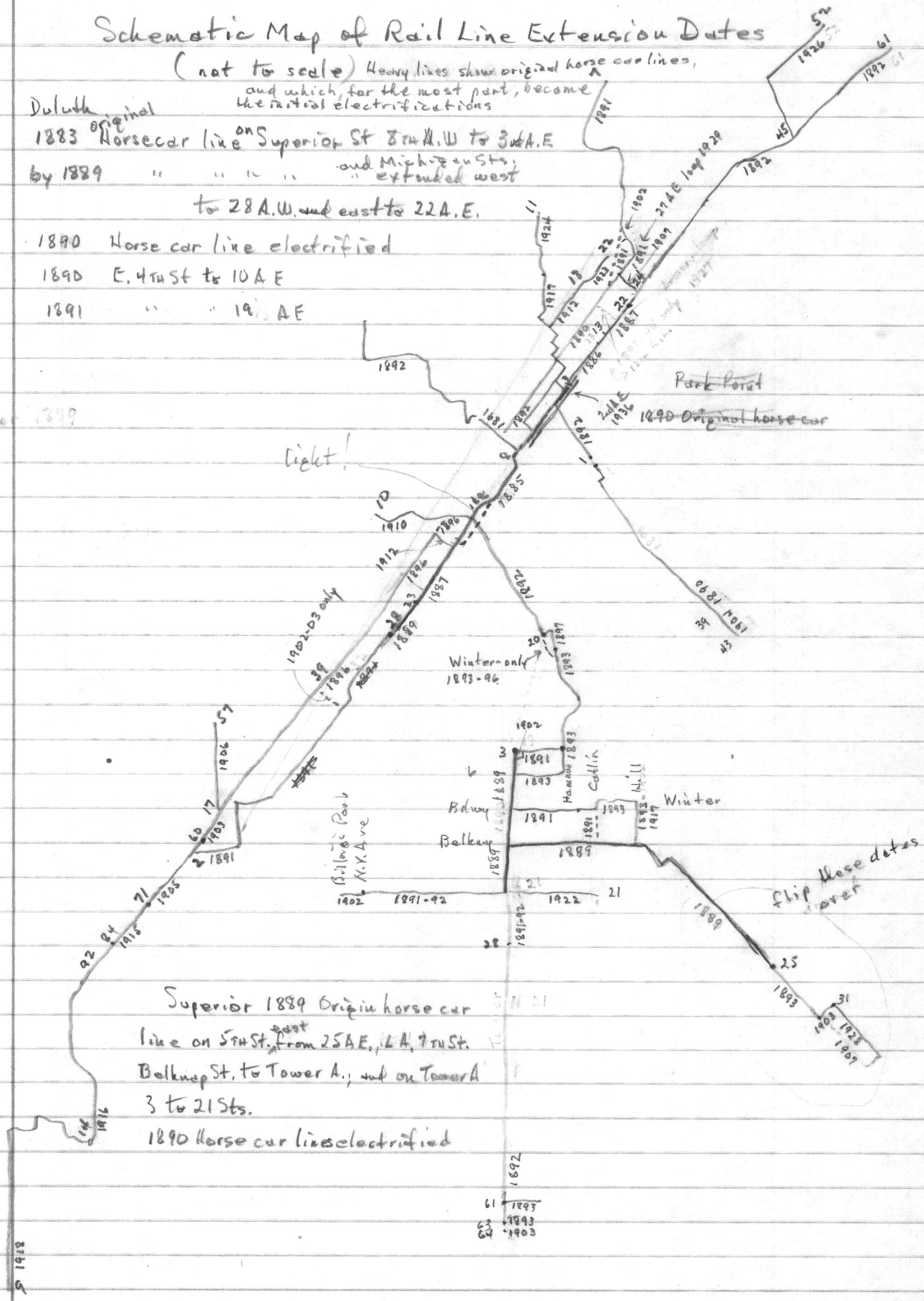
1883 original Horsecar line on Superior St 8th A.W to 3rd A.E

by 1889 " " " " and Michigan Sts. " extended west to 28 A.W. and east to 22 A.E.

1890 Horse car line electrified

1890 E. 4th St to 10 A E

1891 " " 19 AE



Superior 1889 Origin horse car line on 5th St. east from 25 A.E., 6 A, 7th St. Belknap St. to Tower A., and on Tower A 3 to 21 Sts.

1890 Horse car lines electrified

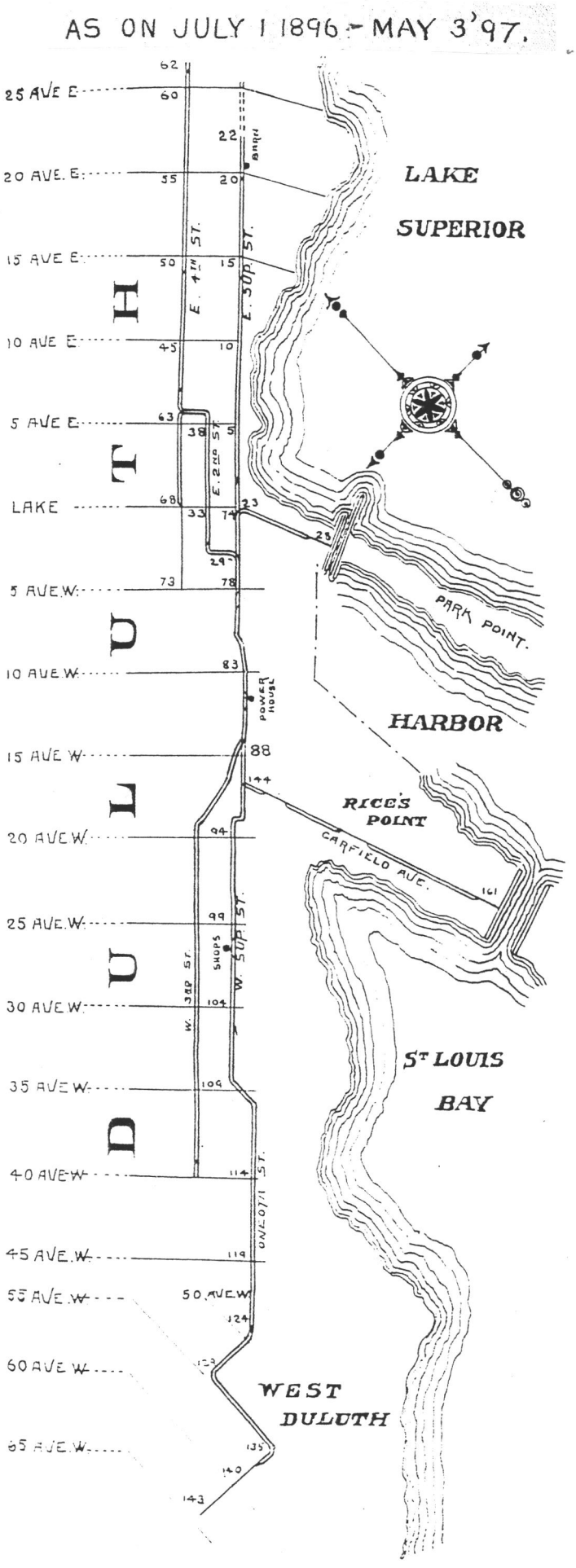
3.30 RAIL LINES, DULUTH

Shown here are Duluth rail lines as of May 1887, a total of 36.1 miles of track. Except for double tracks laid on the newly-built Interstate Bridge in September 1897, and wyes built at 62nd Ave, W. and at Morse St. in July 1899, there was no rail line construction in Duluth for three years after 1897.

The primary cause of this unfortunate hiatus in rail line construction was a period of severe financial difficulties: foreclosure and exchange of capital stock. All was released from receivership on August 12, 1900.

There followed thereafter, a catch-up era of construction brought about, primarily, by plans for the coming of the larger, double-truck cars, and acquisitions, in 1901, of the Lakeside and Woodland operations, both of which were real estate promotional electric lines.

Note the cross-overs at the ends of all double-track lines for the turning of double end cars in service at that time. (see also 3.18).



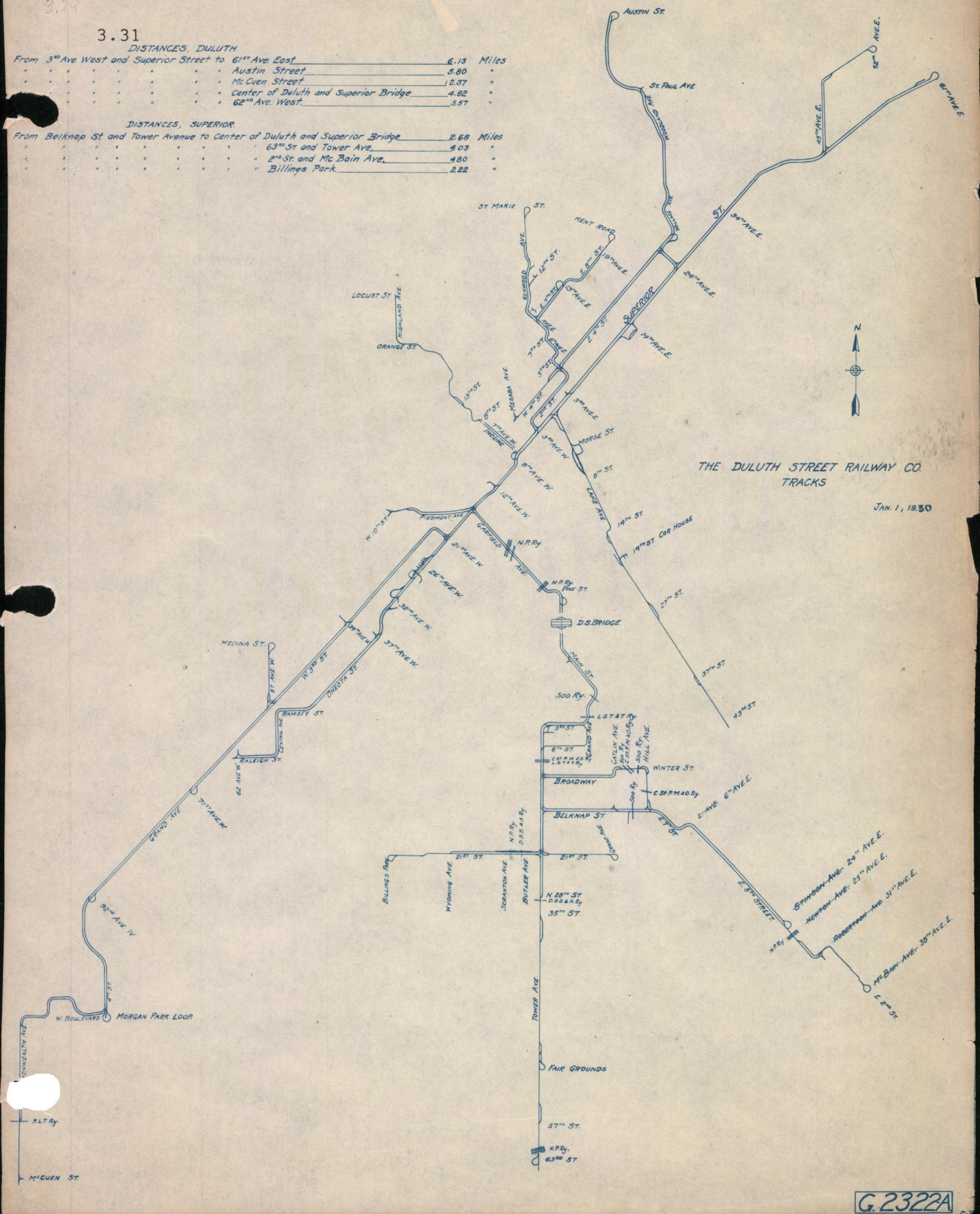
3.31

DISTANCES, DULUTH

From 3rd Ave West and Superior Street to 61st Ave East	6.13	Miles
" " " " " " " Austin Street	5.80	"
" " " " " " " Mc Cuen Street	12.37	"
" " " " " " " Center of Duluth and Superior Bridge	4.82	"
" " " " " " " 62nd Ave. West	5.57	"

DISTANCES, SUPERIOR

From Belknap St and Tower Avenue to Center of Duluth and Superior Bridge	2.68	Miles
" " " " " " " " 63rd St. and Tower Ave	4.03	"
" " " " " " " " 2nd St. and Mc Bain Ave.	4.80	"
" " " " " " " " Billings Park	2.22	"



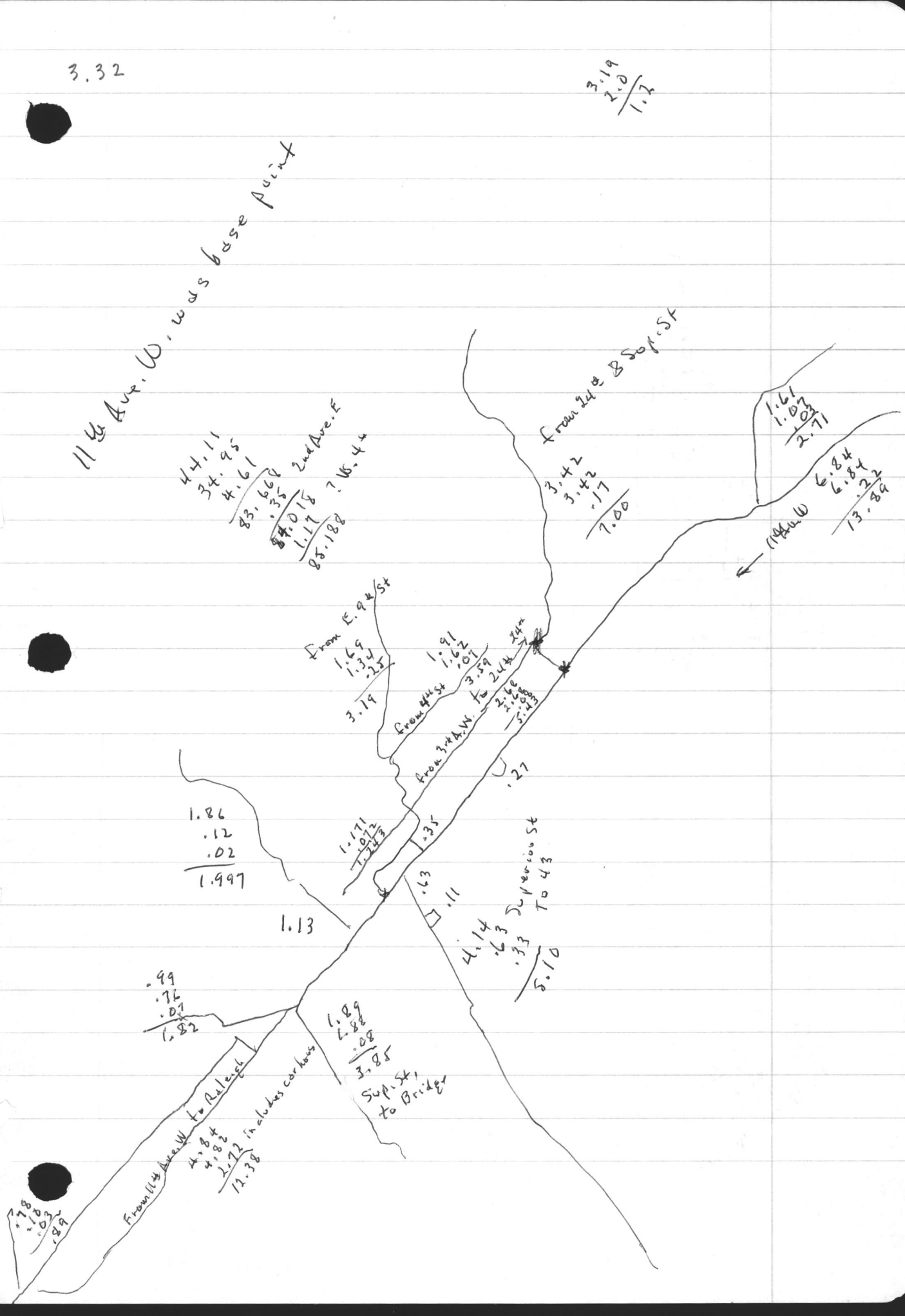
THE DULUTH STREET RAILWAY CO.
TRACKS

JAN. 1, 1930

G.2322A

WAYNE C. OLSEN
140 W Kent Road
Duluth, Minnesota 55812

3.32



11th Ave. W. was base point
3.19
2.0
1.2
44.11
34.95
4.61
83.668
.35
84.018
1.17
85.188
2nd Ave. E
? W. 4th
From 24th & Sup. St
3.42
3.42
.17
7.00
1.61
1.07
.03
2.71
6.84
6.84
.22
13.89
11th Ave W
From E. 9th St
1.69
1.34
.25
3.19
1.91
1.62
.07
3.59
From 4th St
From 3rd A.W. to 24th
24th
2.68
2.68
.08
5.43
.27
1.86
.12
.02
1.997
1.171
.072
1.243
.35
.63
.11
1.13
4.14
.63
.33
5.10
Superior St
To 43
.99
.76
.07
1.82
1.89
1.88
.08
3.85
Sup. St.
to Bridge
From 11th Ave. W to Raleigh
4.84
4.82
2.72 includes carhous
12.38
.78
.18
.03
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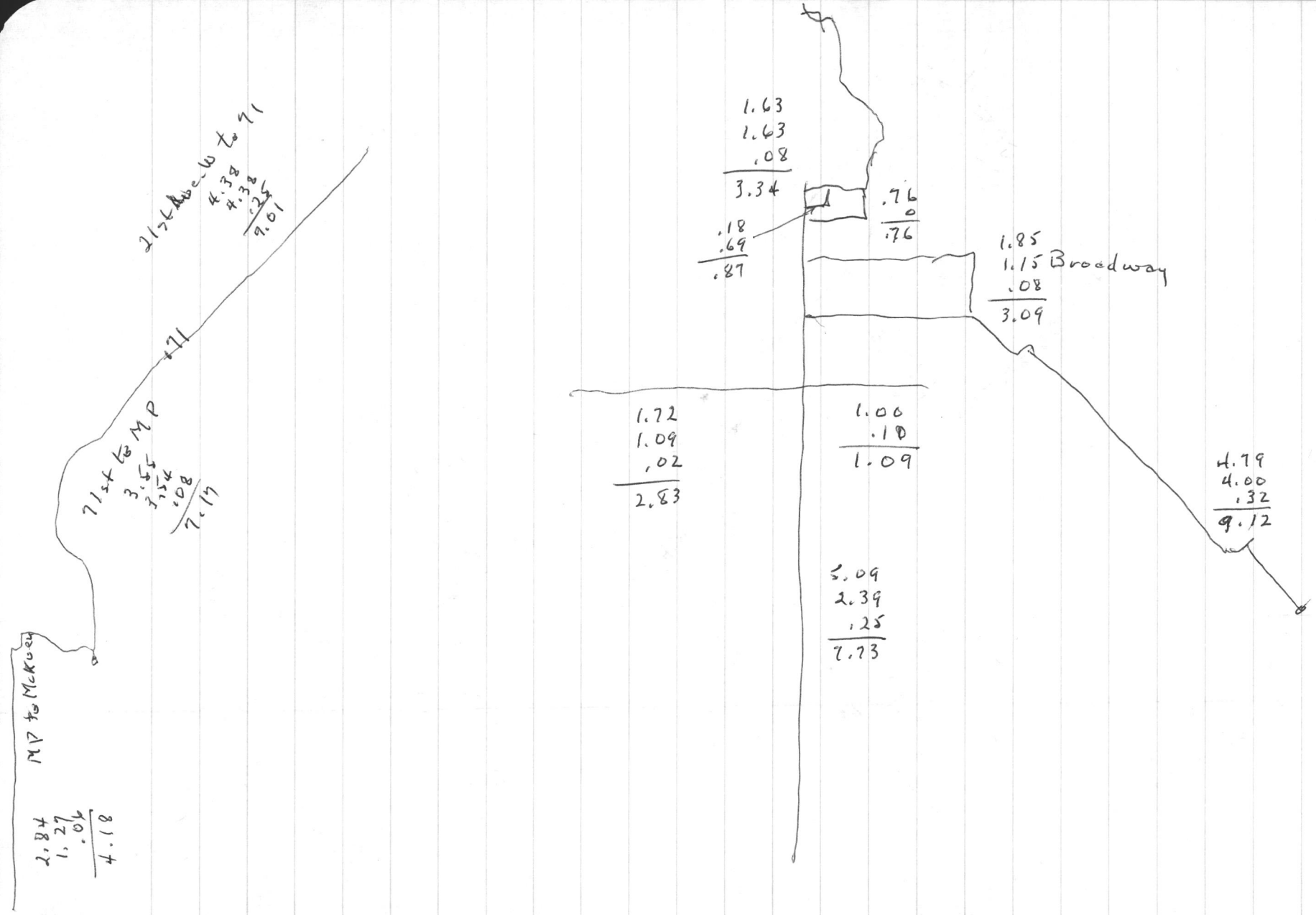

21st Ave W to 71
4.38
4.38
.25
9.01
71st to MP
3.55
3.54
.08
7.17
MP to McKown
2.84
1.27
.07
4.18
1.63
1.63
.08
3.34
.18
.69
.87
.76
0
.76
1.85
1.15 Broadway
.08
3.09
1.72
1.09
.02
2.83
1.00
.10
1.09
5.09
2.39
.25
7.73
4.79
4.00
.32
9.12

SECTION 4

OPERATIONS

4.1 General: chain of command
.2 Platform & personnel, criteria for job stds, etc, smoking, drinking, uniforms
.3 Platform & " picking runs, co. selections, pairings, union, women
.4 Standards of operations & special orders, meetings, rule book, street guide, terminology (day card, run card, right & wrong way)
.5 Safety & speed, accidents, (restrictions), dead man control, single track, r of w, rr crossings, wyes (backing)
.6 Service & interruptions (reductions and except snow): defects, construction, weather, track conditions, boats, (economics)
.7 ~~Crowd~~ handling: entrance/exit doors/gates, car starters/supervisors, complaints, flu
.8 Charters: special movements, private car
.9 Trailers; trains, double-heading
.10 Express runs, skip stops, near-side, owl.
.11 Fare collection, turnstiles, transfers, tokens, tickets, day card, stop overs, passes (news agents, police, firemen)
.12 Horse cars
.13 Electrification, extensions
.14 Schedules, routing, Duluth Headway
.15 " " , Superior
.16 Route/destination signs
.17 Non-passenger; mail, newspapers, ~~news agents~~, dogs
.18 Miscellaneous, car miles, passenger counts
.19 Winter, snow plowing
.20 Quemen cars, Birneys, Light-weights
.21 Work equipment
.22 Non-rail equipment,
.23 Jitneys
.24 ~~Passenger~~ Buses
.25 East End & Armory
.26 3rd Ave. E., 2nd Ave. E., 3rd Ave. W., 8th Ave. W., 12th Ave. W
.27 Lake Ave & Aerial Bridge
.28 E. 4th St., 12th Ave. E.
.29 W. 4th St
.30 Woodland, Hunters Park, Morley Heights
.31 E. 8th St./E. 9th St.
.32 Kenwood
.33 Crosley
.34 Lester Park
.35 Incline, Highland
.36 Park Point
.37 Piedmont

OVER

.38 West Duluth via Oneota St. 32, 37, 26, 21, 1
.39 W. 3rd St. / Grand Ave. 17, 39, 71, 92
.40 Morgan Park, Gary, New Duluth
.41 57th Ave. W.
.42 Interstate, Duluth Garfield
.43 " , Superior Main St.
.44 Allouez
.45 East End
.46 Billings Park
.47 Broadway
.48 21st St.
.49 South Superior
.50 6th St
.51 ~~3rd & Ogden~~ 3rd St., 3rd & Ogden
.52 Car Houses.
.53a Assignment of cars, ~~Duluth~~ general, slow/fast
b " " " , Duluth
c " " " , Superior, Interstate

Jim Kreuzberger text—Chapter 4

Operations
4.1 Operations, General
"Our business is to transport people from where they are to where they want to go...and it is your responsibility." W. S. Byers, Supt. Of Operations

It would indeed be a formidable task to give you an in-depth report of the vast and varied operations of a street railway. Much of the mundane, routine, day-to-day operating details are therefore minimized herewith; these can be found in the company's periodically revised _____ (see appendix 6A). They were then much the same as today's transit operations. The main thrust here, therefore, is not those aspects of operations that were unique to DSR. What follows is a selective yet comprehensive record of DSR's operations, the scope and diversity of which reflects the company's commitment to service.

4.2
By today's standards, DSR's strict code of work ethics and dress code for conductors and motormen seems quite severe. Platform personnel met the critical eye of the station foreman each day as they reported for duty: neat uniforms, trimmed hair and beards, shined shoes. Bane of all concerned was management's very uncompromising attitude toward the use of alcohol and tobacco. In a brief written "evaluation" of his performance, a superintendent had this to say about a motorman/conductor: "I had quite a talk to him about his work...I told him I was still receiving reports of him leaving the car...and smoking cigarettes while on duty, and that I would be looking around for someone to take that work, as I did not tolerate any such conduct. He assured me that...if we gave him a further trial, he thought he could do better."

4.3
During World War I with its shortage of men, DSR utilized women in the Operating Dept., where they served well as conductors. DSR referred to them as conductresses, car women and train women. None of them were trained or used as motormen. First hired May 10, 1918, 20 women served during the war and postwar years. Through attrition, their numbers diminished. There were only five in June 1924; the last was retired in May 1929.

DSR's strict code of work ethics probably produced some anxious moments in the initial period of hiring and duty assignments for these women. It was determined that management would hand-pick the motormen that were paired off with the women, and the women themselves participated in the pairings. Although the women were not permitted to work regular runs on the Interstate line, there were instances when they did work picnic and holiday extras to the fairgrounds and Billings Park. A special order issued for such an occasion stated: " As some of these runs are likely to be in charge of women conductors who have never practiced on

the Duluth-Superior line, we expect all motormen to be particularly careful in the operation of their cars..."

A platform employee who was qualified as both a motorman and conductor was referred to as a "double-ender".

Snow plow crews were a select group of operating department employees. These are described in 4.19.

Although DSR and its employee union established and maintained a seemingly frictionless seniority list as part of its working agreement, management insisted on picking the job assignments for the Incline, Highland and Park Point routes. Safety was a major consideration on the Incline and Highland runs. Because of its isolation and difficult operations, Park Point resident employees were allowed first pick.

4.4
Special Orders
In 1930 an average of ten special orders were issued each week, covering a wide range of schedule changes, operating practices, safety concerns and personnel matters.

The Rule Book
Operating Department employees called on the carpet were regularly scheduled for performance review evaluation by the superintendent in his office (referred to by management as "reading the record"), at which time employee demerits and deficiencies were noted and opportunity given for discussion of suggestions for improvement of employee performance and service to the riders.

"Winding up" or "notching up" the controller meant bringing the controller handle around to its maximum position so as to obtain the greatest amount of power from the motors. This was done in 8 steps, referred to as notches or points on most controllers. Reaching the highest of these was referred to as being "on the brass".

Motormen and conductors were furnished a frequently updated "Street and Avenue Guide" for all lines in Duluth and Superior. It listed all passenger stops, streets and numbering systems.

A motorman's day began when he was expected to "show up" and "plug in" at the station foreman's office ten minutes before scheduled pullout time. He then checked the bulletin board for special orders, weather report, and announcements before going to his assigned car which shop personnel will have pulled up in front of the station foreman's office, with destination signs properly "marked up". The day ended when he parked his car in front of the station foreman's office and turned in his run card to the foreman. A conductor's day began the day before when he was expected to obtain necessary change and tokens for the following day at the same time he turned in his day's receipts to the cashier. On the following day he plugged

in much like a motorman. His only additional duty was to obtain a sufficient supply of transfers from the transfer clerk before boarding his assigned car.

Terminology
Extra board: Motormen and conductors who did not have a regular assigned run.
Straight piece
Trippers: short rush hour runs
Switching short/short line. Turn back: ending a trip at an intermediate point on the line.

Track use at the Duluth carhouse
Wye the cars off westbound lead into track 12, pull forward, then back cars into tracks 8 or 9 for brake adjustment, then to yard. Track 18 was for westbound pullouts. Sensineco gave shopmen cigars to get a "good" car.

On two-man cars, conductors could perform most of their duties while the car was in motion: count, punch and record transfers, record passenger counts and farebox readings, change destination/route signs, look through the car for lost articles, remove snow and ice from door wells.

With the coming of one-man cars, duties of the motorman and conductor were combined into one person, commonly referred to as the operator, who was not able to—and for safety's sake was not permitted to—perform many of those duties while the vehicle was in motion. The Schedule Department attempted to provide an additional minute or two to the normal 4-6 minute layover time at the end of each half run.

The night station foreman requested and obtained a weather report, which he typed in a prescribed form and forwarded to the Superintendent.

Before the coming of the front exit cars and the one-man cars, DSR experienced the difficulty of getting standing room only passengers to move to the front of the car. To alleviate the situation somewhat, in certain situations a limited number of passengers were permitted to enter through the front (motorman's) door. However, passengers were strictly forbidden to ride on the front platform. In specific situations where a large number of passengers got off at one stop (school, circus, shipyard, steel mill), motormen were permitted to allow passengers to exit through the front door. Inasmuch as this was a somewhat difficult, hazardous action, motormen were cautioned not to allow women through the front of the car.

Special orders provided specific instructions for the handling of anticipated large crowds. "All conductors and conductresses must exert every effort to handle their loads quickly and safely making use of their voices at all times to direct the movement of passengers..."

Regularly scheduled monthly meetings were conducted by the Operating Department at which company officials discussed a wide range of subjects, most of which related to operations. Two sessions, one for each shift and the other for the later shift employees, also provided a discussion and question-and-answer period for operating personnel.

Management was especially concerned about the ever-present hazard of broken or fallen trolley wires. Specific instructions were given to motormen/operators for the reporting of such situations, which in turn set procedures in motion for quick repairs by the Roadway Department.

4.5
Nachod signals 10-23-31
Wyoming Avenue on Billings Park loop
31st Ave. E. and 4th St. on Allouez
57th Ave. W.
College Ave. on Kenwood

Safety
"Inability to observe proper precautions and run on time will not be accepted as an excuse (in case of an accident). While it is desirable to have cars on time, it is a matter of secondary importance as compared to the avoiding of accidents and making our service safe." From a DSR Special Order to Motormen.

DSR incorporated every known mechanical and electrical device and procedure that would assure safe operation of the newly introduced one-man cars in Duluth in 1928. Nevertheless, management was concerned about the potential dangers of backing these cars, particularly the backing of cars on the Aerial Bridge line. To and into Morse Street from Lake Avenue. Apparently the dangers of backing cars at this highly congested location prompted DSR to replace the wye with a loop soon after—in August. A special order dated 3-31-28 gave specific instructions on how this must be done. Backup controls were installed eventually on all one-man cars to facilitate the backing operations.

DSR was very concerned about the safe operation of the Incline. Bypassing seniority lists, management selected, trained and periodically retrained the regular and substitute engineers (motormen) who operated the incline. Detailed instructions were issued and frequently revised to maintain utmost safe operation of the Incline cars, even to the precise location of fare registers near the doors and control levers when they were relocated in Jan. 1921.

Incline conductors were specifically instructed in the use of the air brakes when approaching Superior Street so as to make a soft "landing" and to avoid "striking the air buffers too hard".

DSR's safety record was remarkably good considering the great hazards of operating its cars on steep grades—up to 10.65 percent—and under severe winter conditions. Company standards of operating proficiency were high. At an early time, a serious hazard developed when electric cars replaced the horse cars. Passengers who had become accustomed to boarding and leaving the relatively slow moving horse cars exposed themselves to great danger when they extended the same practice to the faster moving electric cars which had open platforms with no gates or doors.

The first known casualty was a Pete Nelson who was dragged and severely injured when he fell when attempting to board moving car #35 at 5th Ave. W. and Superior on 5-12-91. Less than two months later, on 7-7, Thomas Broley, age 24, a recent arrival from Britain and member of the Duluth Foot Ball Club, fell and broke his back while stepping from a movie car to its trailer. He died three days later, DSR's first passenger death. DSR paid for the funeral, casket and hearse.

Following the 1891 incidents, DSR carried millions of passengers for millions of miles without a fatality until the fateful evening of 1-6-27. Seven passengers were killed, and a locomotive fireman and 16 passengers were injured, when a Great Northern passenger train struck car 169 inbound from Billings Park at the 21st Street crossing. The car had become trapped by the premature lowering of the crossing gates. An irate citizenry demanded that the use of the one-man cars be discontinued on all lines in Superior. Although investigation of the tragedy at several levels of government failed to find DSR negligent. DSR and GN agreed share the claims evenly.

Every possible mechanical device and operating practice was incorporated in the operation of the Incline. Ironically, the only known injury occurred in the final year of Incline operations (5-30-39) when 20-year old Oscar Hanson fell between a moving car and the 2nd Street station. Resulting in minor injuries.

DSR was concerned about the hazards of two-way operation of cars on its few stretches of single track, particularly Park Point, 57th Avenue W., Kenwood, Piedmont, Highland Avenue, New Duluth, Allouez, Billings Park and South Superior. Standard procedure, even on those portions where there were Nachod signals and Aimco electric signals, was the carrying of a right of way sign. This applied to all movements, passenger cars, work cars and snow plows. In the event of any disruption in the prescribed procedure, the motorman was required to call in for instructions. These extra precautions seem to have been justified: there are no known instances of head-on collisions, a tragedy that occurred all too often on electric lines, sometimes putting them out of business. This rule was relaxed for the safety-equipped one-man cars which began to appear in 1928.

The ever-present hazard of operating cars on Duluth's steep hills required some unique operating procedures, among which was the strict requirement that motormen bring their car to a complete stop with the hand brake only on each

eastbound approach to 7th Avenue W. Motormen were also required to make safety stops when approaching railroad crossings, draw bridges, fire halls and fire runs.

To promote safe operation of its cars, to encourage a competitive team spirit and to recognize and reward "efficiency in accident prevention", DSR instituted a safety contest in 1926 or 1928 for Duluth Division motormen and conductors, establishing criteria for a quarterly point rating system and procedures for award distribution among operating employees divided into 11 teams. Several motormen and conductors had remarkable multi-year records free of chargeable accidents.

High on the list of positive features of the one-man cars were the greatly improved electrical and pneumatic control systems. Even after their introduction and initial operator training period, DSR continued a program of testing procedures for slowing and stopping its cars under varying track conditions using normal air brakes, dead man control or one notch on the controller in reverse position. Results of the tests are interesting and were disseminated to platform personnel.

Classification of accidents, charging of accidents and appeals were handled by a Safety Contest Committee. At the request of the employees, an accident prevention contest among individual employees was begun 3-1-28 with certificates and cash bonus awards. On several occasions, DSR won first and second place national awards; on these occasions an employee was chosen to represent "the fleet" at the National Safety Council Congress. The contest was extended to bus drivers when DSR entered the National Safety Council competition in 1932. DSR bus drivers won the national award in 1932 and 1933.

Speeds

Standard car had a top speed of 37 mph. However, cars exceeded this speed considerably on long downhill stretches. Although passengers complained to management when this happened, there were no serious accidents resulting from reckless or improper operation of the cars, a truly remarkable record.

Lightweight cars #301-305 had slower operating speeds, but greater acceleration and touchier brakes.

In an era of a much slower pace, DSR was forced by law to restrict the speed of its cars.

Speed limits

In Duluth, effective 12-8-90 5 mph within the city, 12 mph elsewhere.
In Duluth, effective 12-16-91 8 mph.
In Duluth, effective 1894 12 mph W. 3rd St., Michigan to 21st Ave. W., Piedmont, W. Duluth, 2nd St., Garfield. 15 mph Lake Ave., W. 4th St., East End. 20 mph all else.

In Duluth, effective 8-31-37 30 mph for streetcars and gas buses.

In Superior, established by ordinance 1-22-30
Residential areas 20 mph
Business districts 15 mph
All other areas 35 mph

The Operating Department was particularly concerned about the speed of its cars on downhill grades. Special order, dated 10-29-21 stated, "The attention of all motormen is called to that part of Rule 269...cars must not be run down any grade of seven percent or more faster than same car and load can be propelled up the same grade." Company records indicate that Hartley Hill on the Woodland line was a favorite downhill racetrack.

DSR cars crossed railroad tracks at no less than ten locations in Superior, some of them multiple track crossings, resulting in several grade crossing accidents and numerous near accidents. Car 264 was demolished at the C&NW grade crossing on Hill Avenue and 13th Street only four months after it went into service. Fortunately, there were no deaths or serious injuries except for the 21st Street accident.

Management was particularly concerned about safe operation when extremely thick fog developed, a frequent occurrence in Duluth-Superior. At places of possible danger (switches, single track, railroad crossings, sharp curves, draw bridges) the conductor was required to walk ahead of the car. For many years, a signal by day and a light by night was displayed from the roof of a shipbuilding company's office to control traffic access across the nearby Lamborn Avenue bridge. In foggy weather when the signal/light was not clearly visible, a flagman rode on the platform of each passing car to assure safe passage.

DSR installed its first electric track switch on eastbound Superior Street at 3rd Avenue W. on 12-1-20.

OPERATIONS INTERUPTIONS
By and large, equipment failures caused the larger proportion of schedule interruptions.

Spanish flu
On Nov. 9, 1918 the city health department placed a strict quarantine on the city which, in effect, was to limit the movements and assembly of people as a means of controlling the spread of the deadly Spanish influenza epidemic. DSR conductors were ordered to allow on 85 passengers at a time on the cars, severely reducing passenger traffic and earnings. Passenger revenues for the months of October, November and December 1918, instead of showing a normal increase over the corresponding period of the previous year, showed an actual decrease of $38,933, and a conservative estimate of the loss in revenue due to the epidemic would be $50,000.

Passage of ships during the navigation season caused frequent, and sometimes lengthy, interruptions of service on the Interstate and park Point lines.

In an effort at positive public relations, DSR inserted a column in the daily newspapers explaining the previous day's service interruptions and, in some instances, notice of anticipated interruptions.

Late winter and early spring brought the threat of freezing rain and sleet. Ice coated trolley wires severely hampered operations and heavy coatings of ice caused trees, poles and wires to fall. The ice storm of 3-5-35 was so severe the Allouez line was permanently abandoned when much of the trolley wire and poles fell. Procedures during an ice storm called for the use of ice cutters attached to the trolley wheels and the running of extra cars—all night if necessary—to reduce the buildup of ice on the wire. With the expedient use of a step ladder, a crew at 3rd Avenue W. quickly attached the cutters to cars as they passed that point.

The coming of spring, ironically, brought more operating problems. The water from melting snow, mixed with the salt used on streets, produced a troublesome solution which caused electrical malfunctions in motors and wiring.

Falling leaves and elm seeds crushed on the tracks made the rails extremely slippery, causing adhesion problems.

Cars tended to squeal as they rounded sharp curves. To minimize this DSR employed "curve men" who daily greased the curves and swept debris out of the switches and flange troughs.

4.7
Passenger traffic

It is difficult in this era of the private automobile to visualize the movements of large crowds by streetcar to and from ball parks, circus grounds, fairs, carnivals, religious gatherings, parades, picnics and other events. On a Sunday in late June 1902, 55,000 fares were collected in Duluth.

In 1919, Duluth observed 4th of July with parades downtown and in West Duluth, carnivals at Lester Park and Fairmount Park, a water regatta on Park Point, a community celebration in Duluth Heights and a church picnic at Lincoln Park. DSR was hard pressed to handle the crowds. Every car that could turn a wheel was put on the streets. Roadway Department motormen and conductors and qualified office personnel were drafted for duty. The superintendent, supervisors and line foremen were assigned specific areas of the city, assisted by shop men as trouble shooters. Work cars, wrecker and tower cars and trucks were ready with crews in the event of equipment failures. Shop men were stationed at railroad crossings to flag and at track intersections to throw switches.

The biggest day in DSR history was 2-15-27, the day of the Winter Frolic parade, when over 130,000 fares were collected. The Tri-State fair generated considerable traffic on the South Superior line. During the one-week Fair in 1934, 43,000 passengers were carried to the Fair.

There were other occasions—the Christmas shopping season, Easter Sunday, New Year's Eve—when DSR advertised and provided extra service. In 1926 there were ski tournaments at the Chester Park Bowl on several winter Sunday afternoons when regular Kenwood line service was supplemented with enough additional cars to provide a two-minute headway. Several cars made through runs from Superior.

In the summers of 1932 and 1933, the Northern Pacific railway brought large numbers of people to Duluth on low fare Sunday excursions from cities and towns all over Minnesota. DSR offered a choice of 50 cent sightseeing trips in Duluth using streetcars, buses and the Incline.

Streetcars could be chartered. Charter was a convenient and inexpensive way to move church, school, fraternal and other groups to and from a common destination—picnic, amusement park, the beach and meetings. DSR management encouraged the use of charter, as they normally utilized idle equipment and crews outside the rush hours.

The private car "St. Louis", in addition to providing travel for company officials, was available for private parties. It was kept on track #2 and covered with canvas.

The morning rush hour was especially troublesome because DSR carried the long haul junior and senior high school students. These students, riding on considerably reduced fares, travelled to school at the same time as most commuters were headed to work. In 1933, when plans were being made to convert the east End line from rail to trolley bus, DSR advised the City and school board officials that two or three fewer new trolley buses would be needed if high school starting times were set back one half hour.

In May 1923, DSR rebuilt ten of its standard cars with front exits. Although this relieved congestion for passengers wishing to leave the car, and encouraged passengers to move forward toward the normally uncrowded front of the car, company records and interviews with retired employees do not reveal why DSR did not convert more cars to this seemingly advantageous plan (TCRT converted nearly half its cars). An interoffice memo hints that in severe winter weather considerable heat was lost when both doors were open simultaneously.

Car starters were first used in 1892. Starters were supervisors stationed in booths at 3rd Ave. W. and Superior Street and at Tower and Belknap. Their duties were to track on-time performance, add and adjust service as needed, call for additional service, and generally serve as a liaison between the station management and the car crews. The Superior starter's booth was eliminated 5-20-30.

6.9
Trailers, trains and double heading

Trailers on the Woodland line
MLI had motor cars and open trailers when operation first began. Almost immediately operation on the Woodland Avenue grade above 4th Street became a problem, largely because of MLI's determination to pull trailers. Trailer operation probably continued until DSRE bought the line in 1900. The four trailers found their way Park Point by 1902. Woodland seems to have been DSR's only involvement with trailers.

Trailers on Park Point
Three ex-MLI trailers were used with the four new streetcars obtained when the line was electrified in 1899. Six open ex-cable car trailers were acquired from St. Paul City Railway in 1906. The nine open trailers were very popular with the summer beach crowds and were probably operated until the severe decline of service in 1913-15; none of them was on the property when DSR acquired the line in 1917. Two freight trailers were used from 1907 to 1917.

Trailers in Superior
Douglas County Street Railway used its four horsecars as trailers after conversion to electric operation. It also purchased three closed trailers in 1890-91. With its flat topography, Superior seems to have had considerable trailer operation. It continued until the arrival of the first large double-truck cars in 1901, at which time management stated "...they will enable us to do away with the use of trailers. The trailers are a fruitful cause of accidents, and no matter how careful motormen and conductors are, it seems to be impossible to prevent accidents when they are used."

Trains
A shortage of double-ended cars caused an unusual situation when the Aerial Bridge line on Lake Avenue was isolated for several weeks by paving work on Superior Street. The solution was to couple a pair of double truck streetcars back to back, crewed by a motorman and two conductors. This was also done on Park Point during some busy weekends and holidays.

Double-heading
When large crowds were anticipated, DSR's practice was to operate two cars on the same schedule, a practice called double-heading. To speed service, the cars would make alternate stops.

6.10 Express trips, skip stops, near-side stops
Express trips—scheduled cars making limited stops or no stops between designated points—are known to have operated to handle large crowds to and from the circus and to the fair grounds in Superior. Others were operated to and from the Riverside ship yards in World War I.

As early as 1903, DSR experimented with limited stop outbound trips during the evening rush hour. Two cars signed "Hunters Park Limited" leaving 3rd Ave. W. between 5 and 6 o'clock stopped only at Lake Avenue, 23rd Ave. E., Hunter's Bridge, Coffin's Switch, Lewis Street, St. Andrews Street, and Hunter's Park (probably Oxford Street). This service was terminated in March 1905 when the larger double truck cars entered service.

In 1919, there were three evening express trips to Lester Park and three to Hunters Park/Woodland, stopping only at Lake Avenue, 3rd, 12th, 18th and 24th Avenue E.

Two evening express trips on the Interstate line began on Nov.14, 1925, when the line was through-routed to Superior's East End.

Near side stops
During the era of two-man cars when all passengers boarded and alighted through the rear platform, most stops were located on the far side on intersections. This placed the passengers closest to the crosswalks, streetlights and, in winter, where the snow had been removed. When the system converted to one-man operation, all passengers boarded through the front door, so the decision was made to stop on the near side of intersections.

Skip stopping
Skip stopping was instituted on 10-1-1918 as a World War I economy measure. Street intersections skipped on the outbound trips were stops on the inbound trips. Skip stopping shortened running times by up to five minutes, and schedules had to be changed accordingly.

6.11 Fare collection
There were no conductors on the early-day horsecars. Passengers inserted their nickel fares in an incline slot along the side windows, the coins rolling down to the front for inspection by the driver on the front platform.

All the early electric cars had two-man crews. Practically all fares were hand-collected by the conductor as he passed through the car, registering the fares on Lewis & Fowler fare registers, and later on International registers which were used by SRTR and DSR on all their cars.

Rapidly rising costs, declining ridership and other factors following World War I forced DSR to experiment with various techniques and equipment which was collectively referred to as pay-as-you-pass or pay-as-you-enter (PAYE).
The Johnson type IM2 farebox had proven successful and was being used quite extensively at this time. It afforded excellent visual inspection of coins dropped into it, and tallied the coins and tokens that passed through it, affording an accurate, quick tabulation for the conductor's reports. DSR's first fareboxes were installed on the Birneys, Park Point cars and the West 4th Street shuttle cars.

In combination with the fare boxes, DSR expended $3600 in 1920 to convert a small group of cars with Perry turnstyles and foot operated fare registers. In July 1920 eight cars with turnstyles were assigned to the West Duluth-Aerial bridge line. There was much public opposition to these devices, so much that they were removed in September 1923. In a preplanned protest a month earlier, a group of irate passengers refused to pass through the device or pay their fares. DSR continued to experiment with PAYE plans, with the introduction of Cleveland fare boxes and PAYE on all cars in Superior on Oct. 1, 1923, simultaneous with a fare increase.

PAYE modifications were incorporated into all the newly rebuilt front exit cars that went into service November 1, 1923. Several plans were tried, mounting the fareboxes and fare registers in various locations near or on the inside rear bulkhead, and in some situations, requiring the modification of rear seats and the addition of railings and stanchions. All 21 Superior cars were thus equipped in April 1924 and 16 Duluth cars in May. In addition, 17 Interstate line cars were PAYE, but without fareboxes. By Oct. 15, 1926, fareboxes had been installed on all cars and buses.

Until the coming of the fareboxes, fare registers were mounted over the rear bulkhead door. The conductor could register fares from anywhere in a two-man car by pulling either of two cords (one for cash fares and one for transfers) which hung on brackets along the right side of the car above the windows. A cord on the left side was for signaling the motorman. Early electric cars were equipped with Lewis & Fowler registers. Eventually, however, all cars were equipped with International registers.

Conductor uniform coats in early days had many pockets: for issued and collected transfers, tokens, coins of several denominations, punch, timetables and report forms. Before the introduction of fareboxes and coin changers, DSR relieved the problem somewhat by issuing in 1903 a leather belt and pouch device for holding coins.

In spite of the many advantages of one-man cars, fare collection required more time and slowed loading, especially at heavy loading points. Some relief was realized by having teen age boys sell tokens on the street in loading zones during the evening rush hour.

Stop over transfers were offered on the West End from 19th to 21st Avenues W., effective January 1935.

6.14 Routings and Schedules
Horse cars
The horse cars operated initially in 1883, over a single route on Superior Street from 8th Ave. W. to 3rd Ave. E. The tracks by 1889 reached from 28th Ave. W. to 22nd Ave. E. on Superior and Michigan Streets.

Horse cars travelled, with stops, about 4 mph. Based on 4 miles of route, this would require approximately 10 cars to maintain a 15-minute schedule. Teams of mules were changed frequently, probably each time they passed the stables at 11th Ave. W. Those charged with this duty were called "harness men".

The Duluth News of 2-16-1889 reporting on the previous day's heavy snowfall, observed, "Doubling up was the order of the day and cars were run every 15 minutes." "Doubling up" referred to the use of 4 horses instead of two.

The Duluth Tribune of 7-10-1883 said, "The street railway is already more than paying expenses".

Initial electrification
The electrified, regauged Duluth line on Superior Street opened on 11-2-1890. Horse car shuttles continued between 24th and 28th Ave. W. until 12-21-90 because the steam powered generating station was not yet fully operational.

Ridership during the transition
Month of Oct. 1890 horse cars: 75,376
Transition month of Nov. 1890: 98,130
First full month of electric Dec. 1890: 134,152
Jan. 1891: 146,123
May 1891: 203,199

As construction crews were released from Superior Street, construction of the East 4th Street lime accelerated and continued into the winter. After many test runs, which involved some initial apprehension about the 8.7% grade on 3rd Ave. W., revenue service began 12-2-90, less than two months after initial electrification.

By the end of the year, building and rebuilding of several trestles and bridges permitted the construction of the West Duluth line via Oneota Street.

4.15
Superior
Operation of electric streetcars in Superior began 7-1-90, quite probably along the original Tower Ave., Belknap Street, East End horse car line that had been converted to electricity without a change of gauge. By the end of the year, the north end of the Tower Ave. tracks had been extended east on 3rd Street to Lamborn Avenue and a line built on Broadway from Tower to Clough Avenues began operating on 2-1-91.

Duluth owl car service began 7-1-10 and was discontinued 10-11-20, then restored 1-1-25. In Superior, owl service for the shift change at Allouez began 6-28-11.

When the Incline had only a single car, it made half-hourly trips to the top, alternating with half hourly short trips to 4th Street.

jointly by the city and DSR. On several occasions DSR's electric shovel, work cars and panel track were used exclusively in preparing streets for paving. DSR for several years hauled thousands of tons of crushed rock for Duluth's street department. In 1911 a spur track was built into a tipple so that crushed rock could be dumped into DSR work cars from a DM&N overhead track at 33rd Ave. W. and Superior St. Plans seem not to have jelled in Dec. 1919 when the city negotiated with DSR to build a short spur from its tracks on Commonwealth Ave. into the Portland Cement Company's plant to provide direct loading of cement into DSR work cars.

On several occasions DSR was requested to carry large or heavy loads such as granite blocks from a railroad siding to a cemetery. DSR passed these requests on to the city, as only they could grant such exceptions to the franchise provisions. The requests seem not to have been granted.

Although its predecessor on Park Point had been permitted to haul freight on its trailers, DSR's franchise forbade this and the service was terminated soon after DSR acquired the line in 1917.

Similarly, the original operator of the Woodland line (MLI) carried merchandise and groceries for residents. This practice continued until DSR took control in 1902.

6.18 Miscellaneous operations
DSR was occasionally called upon to use its crane car to move obstructions on or adjacent to the tracks: stalled vehicles, even large rocks that had tumbled down from Point of Rocks.

On Sept. 1, 1924, the William Crooks ran over DSR tracks to reach the Tri-State Fairgrounds on Tower Ave.

6.19 Winter operations
In a company memo to President Robertson, General Manager Warren stated, "It is true that our cars are heavy, but on the other hand, by reason of their weight, will run through snow that would completely stall lighter cars...I have never been able to figure out enough savings by weight reduction alone to warrant the large added capital expenditure necessary to bring about an exchange of our present cars for cars of a like capacity which would be materially lighter."

DSR began preparing for winter weather in October. This was the time for installing storm sash on the cars, and to check the coal-fired heaters. Truck-mounted snow scrapers that had gone through the blacksmith shop following their removal the previous spring were reinstalled. Coal/coke scuttles, snow shovels and sacks of sand and salt were placed on each car (DSR had switched from anthracite coal to coke for heating the cars in 1929). During the average winter, 1300 tons of coal/coke were used to keep the cars warm—an average of 9.8 tons per car. On-the-job protective winter clothing was provided for snow plow, wrecker and tower car personnel, including overshoes, gloves, sheepskin lined coats, coveralls, jackets and hoods.

The increased use of automobiles brought changes in streetcar riding patterns. Many drivers "laid up" their cars for the winter. Ridership increased in direct proportion to the severity of the winter.

During severe snow storms, normal through routing of cars was temporarily suspended. Trips from west of downtown were turned at 3rd Ave. E. and trips from east of downtown were turned at 8th Ave. W. This increased the chance of cars remaining on schedule.

A storm on Feb. 22, 1922 was unusually severe. In an interdepartmental memo dated Feb. 21, the master mechanic reviewed armature and other repairs made on the company's snow plows following the Feb. 1 and 18 snow storms. Ironically, at that moment heavy snow was beginning to fall. Strong winds blew during the night and the temperature dropped considerably. So severe was the blizzard that not a car was able to move the following morning.

The plows were able to open the tracks from the shops at 27th Ave. W. to 24th Ave. E. by 1 PM that afternoon, but progress was slow. Large pick and shovel crews were recruited to dig out tracks and marooned cars. The Lake Avenue and Piedmont lines were opened early the next morning (Feb. 23), the Incline at noon, and the East 4th Street, Lakeside and Grand Avenue lines that afternoon. The New Duluth, West Duluth, Highland, Woodland and Interstate lines were opened two days after the storm on the 24th. The east 9th, Kenwood, 57th Ave. W., and half of park Point were opened on the 25th.

Things did not go very well in Superior. Tower Avenue from the shops to 21st Street remained closed until the afternoon of the 23rd. South Superior and Billings Park opened on the 24th, and the East End on the 25th. 6th Street, Broadway, East 21st Street, Allouez and the outer half of Park Point remain closed until the sixth day after the storm. The total cost to DSR was over $30,000, including loss of revenue.

With the proliferation of automobiles, snow and ice on the tracks became compacted and harder to remove. DSR designed and built an ice chopper device to solve this problem.

Snow plow crews consisted of a motorman to run the car and raise or lower the front plow, a wing man to operate the side or "wing" plow, and sometimes a third person to handle the sand and salt, the trolley pole rope when backing, and the cleaning of track switches.

A fast moving plow was subjected to severe stresses. A built-in safety device was the clevis attached to the wing plow control cables which would shear under stress, preventing serious damage to the cables, chains, snowplow or motor. A supply of quickly replaceable clevises was carried in the car as standard equipment.

The labor agreement of 19__ established the standard 8-hour day, which required a major restructuring of runs.

4.17 Mail and newspapers

DSR's franchise specifically limited its operations to the carrying of passengers. It stated "...said tracks and railway shall be used (only) for the purpose of transporting passengers..." However, records indicate that DSR was carrying U. S. Mail to West Duluth, Lakeside and Hunters Park as early as 1898.

Mail sacks and pouches were carried on regularly scheduled cars between the main post offices in Duluth and Superior and several branch offices. Cars carrying mail displayed a "U. S. Mail" sign in the front window. Cars 242-254, which had front platform sliding doors, were preferred for carrying mail and newspapers.

DSR carried the mail under ICC route number 310107, which required "...30 cubic feet of space for pouches, sacks and packages..." DSR filed monthly reports with the Division Superintendent of the Railway Mail Service certifying interruptions and failures in performing the service as specified.

On a typical day, mail was carried as follows:
2 trips each way between 5th Ave. W. and Hunters Park
4 trips each way between 5th Ave. W. and West Duluth, Morgan park and New Duluth
1 trip from Duluth to Superior
2 trips from Superior 14th Street to South Superior
2 trips from Superior to Billings Park
2 trips from Superior to Allouez

During the Christmas rush, an extra employee was assigned to one Morgan Park trip to assist the motorman.

Company pouch mail was carried on the cars daily between the Duluth and Superior offices.

Mail service was discontinued 10-21-35.

Large quantities of morning and evening newspapers were picked up, carried on the front platform of cars, and dropped off at designated places in the suburbs. Especially heavy loads of Sunday morning papers were carried on the Lester Park and Woodland cars, often overflowing into the passenger compartment. Papers were last carried on 9-13-35.

Freight

In the era before large trucks, DSR provided rail equipment for hauling materials to and from street improvement, paving and bridge projects undertaken by the city or

Efficient, safe plow operation required opened windows. Cold, wet mittens, coats and caps were dried on the resistors mounted inside the plow.

Plowing on the isolated Park Point and Highland lines was done differently. V plows were attached to both ends of the two Highland cars and small wing plows to both sides. Park Point car #286 was similarly equipped. Because of its exposure to winds off the lake and bay, drifting snow was a much greater problem for Park Point. DSR's only other weapon was its little four-wheel plow 5/147. Although it seemed undersized for the task, former employees have said that the little plow did Herculean duty, albeit frequently jumping off the track.

In extremely cold weather, a condition referred to as "black rail" occurred, a visual darkening of the rail that reduced adhesion and was usually not improved by the use of salt or sand. Improvement came only with warm sun or more snow.

Normally, three plows were assigned to the Duluth division and one to the Superior division. Duluth division was responsible for plowing the Interstate line.

4.23 Jitneys

Jitneys were autos, pickup trucks with plank seats and small buses seating 6-15 passengers. Jitney operation began in Los Angeles in the fall of 1914, spreading rapidly nationwide. On March 14, 1915 the first two jitneys appeared on the streets of Duluth. Their numbers increased until there were 185 jitneys competing with the streetcars by midsummer. This had dropped to 20 by mid-August, as "jitneurs" found the business unprofitable. Jitney operations ceased during the winter months. But resumed on a lesser scale in Spring 1916, when 50 appeared on the streets. Fewer still appeared in Spring 1917, and by that Fall the jitney craze was practically over in Duluth. Only "a couple" appeared in Spring 1918. However, spasmodically from time to time for several years thereafter, particularly during periods of fare litigation, jitneys appeared on the streets.

The Duluth jitneys operated primarily on Superior Street between 26th Ave. W. and 15th Ave. E., running just ahead of the scheduled streetcars and picking up the short haul passengers.

During their first year of operations in 1915, there were no restrictions on the jitneys. They ran whenever and wherever they wished. Although the city seemed reluctant to control them, an ordinance eventually required the furnishing of a bond. Together with the declining novelty and the hard facts of economics, the jitney had had its day.

DSR estimated its revenue loss to the jitneys at about 20 percent during the summer months, approximately $150,000 in 1915, $40,000 in 1916 and $10,000 in 1917. The Minnesota State Supreme Court, in a decision handed down 5-28-16, ruled valid a Duluth ordinance requiring jitneurs to obtain a city license and furnish a bond. Their numbers dwindled thereafter.

Jitneys did not appear on the streets of Superior until April 24, 1921, when hourly service was provided. This increased to 20-minute service on 8-21. It was estimated that over 27,000 local passengers were carried that year. Their operations expanded considerably the following year when tey carried 308,000 passengers. This increased to 368,000 in 1923 and to 186,000 the first five months of 1924. Although the WRC did not approve of jitneys or unregulated buses, control of their operations was a municipal responsibility.

On 9-12-23 DSR petitioned the WRC for assistance in getting the city to regulate jitneys. Although DSR was able to get council action, the city failed to enforce its new regulations. Even so, the chief jitney operator ceased service to the east End and Itasca in Oct. 1924. At the height of their operations, it is estimated the jitneys carried 205,000 or almost 9% of Superior passengers. DSR purchased the Superior jitney operation in July 1925.

In 1909 there were only 40 autos in Duluth and 20 in Superior. Competing Interstate buses began on 8-12-24.

Jitneys disappeared from Duluth streets during the Depression. Voters rejected repeal of the jitney bus ordinance in a 4-7-31 referendum.

4.24 Bus operations
As the jitneys disappeared from the streets of Duluth, new competition appeared; small, unregulated buses on Superior Street in 1924, having been banned from the streets of Superior. The city put the matter to the voters in a June 16 election. The result was 12,230 votes in favor and 9483 against a bus regulatory ordinance, A temporary restraining order on June 23 allowed the buses to resume operations. However, the June 16 election was held valid in a further court hearing and bus operations were halted on July 16.

To facilitate litigation on this and related matters, DSR established a subsidiary corporate unit, Duluth Coach Company, in June 1924.

A brief (Aug. 3-23) competing bus service on East 9th Street to Oliver was halted by the courts.

A rival interstate operation by Superior White Company began operating over the Interstate Bridge on 12-22-24.

DSR changes the name of its bus subsidiary in March 1925 to Duluth-Superior Coach Co. and acquired the Superior White Company and its interstate operation on 4-12-25.

DSR's first venture into suburban bus operations was the Morley Heights line on 12-18-24 which connected with the Woodland line at Lewis Street.

DSR's second venture was the Calvary line, which began operation 6-18-25 from the Woodland loop along Calvary Road to Calvary Cemetery. The route was extended to Arnold on 5-20-26, DSR's first venture outside the city limits. Rights were transferred to Walter Sahlen, a private operator, on 7-7-30, who assumed operations the following day. All bus operations thereafter, except trolley buses, were managed by DSR's wholly held subsidiary Duluth-Superior Coach Co.

On 7-13-25 DSC began operation of bus line from the end of the Allouez streetcar to Itasca.

As a substitute for Northern Pacific's train to Fond du Lac, DSC started a bus line 1-1-26 from the end of the New Duluth car line.

On 4-13-27 DSC applied to the MRR&WC for certification to operate an interstate line via the Arrowhead Bridge. On 6-28-27 J. B. Finch, a Superior independent bus operator, made a similar application. DSC's application was approved and service began 7-20, a 20-minute headway, no transfers. Finch's application was denied.

In two years, DSC has established 28.77 miles of bus routes.

On 4-23-28, DSC applied to MRR&WC for certification to operate a Duluth Boulevard route. Service began on 6-15 from a connection with the East 8th Street and Kenwood lines at 6th Ave. E. and 7th Street, west on 7th Street and the Boulevard to to the intersection of Hutchinson and Hermantown Road, and providing service to the Enger Park area. Service was cut back to 3rd Ave. W. on 11-22. The rest of the line was discontinued 11-1-29.

Annoying bus competition came again to DSR at a most wrenching time—when depression induced revenue declines were happening. On 2-17-29, J. B. Finch challenged the city's 1924 jitney ordinance following a State Court denial of his application to operate buses between Superior and Duluth. Taking advantage of technical changes in city ordinances, Finch on 12-3 organized his Gopher-Badger Bus Co. Using two 14-passenger buses, half-hour service began 12-27 between the two cities via the Arrowhead bridge, fare 25 cents. Amid seemingly endless litigation, Finch purchased additional larger buses and began interstate service via the Interstate Bridge on 2-7-30, fare 20 cents. DSR met the competition by inaugurating its own interstate bus service on both routes, allowing free transfers between buses and streetcars, effective 3-29. The fierce rivalry intensified when the Superior Council on 6-25 denied Gopher-Badger's petition to pick up local passengers. The several following months witnessed a plethora of charges and counter charges, indecisive state and city action, even police intervention. All this halted suddenly when DSR on 12-23-31, announced that it had purchased Gopher-Badger.

By 1935, DSB was operating 39 buses, serving all former rail lines in Superior, two interstate lines and four lines in Duluth. With the abandonment of the remaining Duluth rail lines, this increased to 127 buses and 29 trolley buses.

On 1-4-37 a trial bus service was begun, routed from 23rd Ave. E. and 4th Street to 26th Ave. E. and London Road. It was abandoned on 11-4-39 when the Woodland line, now trolley buses, returned to Superior St.

The West 8th Street line began 6-1-37; 39th/40th Ave. W. & Grand, W. 8th Street to 57th Ave. W.

With termination of Greyhound service to Proctor, the Bayview Heights line began 7-12-37; 56th & Grand to 57th to Highland Street and Vinland St. to Proctor.

The Hermantown bus route was extended to Haines Road 11-1-37.

Park Point buses ran through to 49th Street summers only in 1938.

4.25 Notes on Streetcar Routes
East End
Construction of the Armory loop provided dual advantages: a much-needed facility for extra car service for events at the Armory, Amphitheater and Curling Club without interruption to regular service, and a convenient terminal for short turn East End cars, primarily Duluth-bound Interstate cars.

The East End had the dubious distinction of having one of the few stretches of slow order track, the result of poor rail and bad pavement between 3rd and 15th Avenue E., a situation that prompted the substitution of trolley buses to Lakeside 8-5-34 when the street was repaved.

A carhouse was built on the SE corner of 20th Ave. E. simultaneously with the electrification in 1890. Lakeside cars were operated from there until the new shops at 26th Ave. W. were built.

At various times community groups urged DSR to use the 24th Ave. E., 2nd St., 4th St. and Superior St. tracks in different route and loop combinations. These never happened.

East 4th Street
Service on the East 4th Street line was extended eastward as it followed the construction crews laying track in late Fall and winter 1890. This is the only known instance of this. All other lines awaited the completion of construction.

Construction of the 27th Ave. E. loop replaced the hazards of wying at 24th Ave. E.

Rail service ended in 1939 and was replaced by gas buses.

Lake Ave./Aerial Bridge
As the economic fortunes of Lake Avenue declined, so did passenger traffic on this line. Bacause of low traffic it was chosen to received the first four converted one-man cars in Duluth 4-1-28. Complete conversion to one-man on 6-1-28.

When the aerial bridge was opened to through service from Park Point, the Aerial Bridge line was reduced to rush hour only service.

Woodland
The original grade on Woodland between 4th Street and St. Marie was 6 percent.

With the arrival of double truck cars in 1905, they ran only to Hunters Park and passengers transferred to a single truck shuttle to reach Woodland. This lasted only 4 months before the city council ordered through service.

Incline/Highland
Financial reports indicate that the Incline/Highland operation ran deficits every year of their existence.

The original incline cars could carry 4 teams of horses and wagons or 250 passengers, who passed through turnstiles at the top.

On opening day July 4, 1892 some 16,000 persons rode the Incline to hear a band concert.

In the final configuration, the upbound car made it first station stop near 1st Street while simultaneously the down-bound car stopped at Boulevard/7th Street. The second paired stops were 3rd and 5th Streets, then the cars stopped together at 4th Street.

Park Point (see typed manuscript)

West Duluth via Oneota
Competition for passengers developed between DSR and the railroads as DSR expanded during the 1890s., eventually spelling the demise of the railroads' suburban and interstate "short lines". One of the earliest casualties was the St. Paul & Duluth's service to Oneota and West Duluth.

As the popularity of baseball grew, DSR provided additional service facilities at the 34th Ave. W. ball park. An 11-car storage siding was built in 1907.

After World War I, much of the commercial activity between the ore docks and 49th Ave. W. shut down or moved elsewhere. Residential growth moved up the hillside. In a 1925 memo the DSR Superintendent stated, "...it seems a shame that these tracks on Oneota Street cannot be used on W. 8th Street."

Grand Avenue
As construction of the Oneota Street line got underway in 1891, the West Duluth village council granted DSR a franchise to build another line on Grand Avenue. However, it was 12 years before the line was built.

Events at the circus grounds (35th Ave. W.) and Denfield High School (41st Ave. W.) produced much extra passenger traffic and special movements.

Rapidly increasing numbers of shipyard workers at Riverside and steel workers at Morgan Park during World War I severely taxed DSR's Grand Ave. operations. Wartime restrictions made it difficult for DSR to obtain additional equipment. DSR was able to lease several cars from TCRT.

When the W. 3rd Street tracks were laid in 1896, the city engineer forced DSR to lay them on 9 foot 6 inch centers. The new double truck cars were too wide to pass and DSR had to re-lay the track.

Morgan Park-Gary-New Duluth
DSR initially charged a second 5 cent fare, but it was rolled back to a single fare.

Street names in Morgan Park changed in 1930.

In 1900 NP acquired the St. Paul & Duluth and truncated the line to Carlton at Found du Lac. Until 1926 they ran a McKeen car shuttle. When it was abandoned, NP offered to lease the tracks to DSR, who instead started a bus service.

Interstate
Bridge opening delays on Aug.27, 1929, 40 openings in 24 hours, totaling 4 hours, 45 minutes, an average of 7.1 minutes per opening. Max open time was 24 minutes. Bridge operators notified DSR of the openings, setting wheels in motion to turn cars at the bridge approaches or run fillins.

Sometimes the bridges were closed for roadway repairs. Lamborn Street bridge was closed for a month in 1930. Passengers walked across the bridge from one streetcar to another.

4.1
4.2

"Our business is to transport people from where they are to where they want to go... and ~~you are~~ it is your responsibility": W. S. Byers, Supt of Operations

Operations

6.1 Operations, General

It would be, indeed, a formidable task to give an in-depth report of the vast and varied operations of a st. rwy. Much of the mundane, routine, day-to-day operating details are, therefore, minimized herewith; these can be found in the co's periodically revised "Ru etc (Appendix 6A). They were then much the same as of today's mass transit operations. The main thrust here, therefore, is to note those aspects of operations that were ~~interesting and~~ unique to DSR. What follows is a selective & diverse yet comprehensive record of DSR's operations, the scope and diversity of which reflects the company's commitment to service.

6.2 Platform Employees

Upon the conductors, motormen, operators and drivers fell the ultimate responsibility of providing DSR's main commodity: service. In the language of the industry they were referred to as 'platform' personnel, inasmuch as conductors & motormen/operators performed their duties primarily on the rear and front platforms, respectively, of st. cars. (On 1-31-26, for instance, there were 125 motormen and 136 conductors in the Duluth division (see 1.6))

× Statistical data — Sections 2, 3, 4, 5 primarily — are, for the most part, sterile and cold, and do not reflect the human element which ~~becomes a major ingredient in~~ this section seeks to express

× Within the scope of somewhat modest dimensions, DSR's image was one of a great and fascinating variety. Its well-kept street cars ran through elegant residential neighborhoods and through busy industrial areas; along rural roads and thru congested urban streets; thru severe rock cuts and out along the sand dunes; they skirted the waters of the lake, bay and river and climbed the steep bluffs; thru center reservations to the steel mill and over the bridges that crossed busy waterways; and there were convenient connections with ferry boats and inclines.

The yellow cars encompassed an interesting variety of early single-truck "dinkies", Birneys, St. Louis Car Co. classics, relatively modern "light-weight noiseless" cars, inclines, and a large stable of reliable, comfortable "standard" city cars. And, in earlier days, there were open cars, both motorized and trailers.

Whether rolling along tree-lined streets or fighting rush hour traffic on Superior St., the DSR cars dominated their surroundings as no form of transportation has before or since.

By today's standards — compromised by a general permissiveness and labor's condescendence — DSR's strict code of work ethics and dress code for conductors and motormen seems quite severe. Platform personnel met the critical eye of the station foreman, each day as they reported for duty: neat uniforms, trimmed hair and beards, shined shoes. Bane of all concerned was management's very uncompromising attitude toward the use of alcohol and tobacco. In a brief written "evaluation" of his performance, a superintendent had this to say about a motorman/conductor: "I had quite a talk with him about his work... I told him that I was still receiving reports of him leaving the car... and smoking cigarettes while on duty, and that I would be looking around for someone to take that work, as I did not tolerate any such conduct. He assured me that... if we gave him a further trial, he thought he could do better."

Drinking

Platform personnel were periodically scheduled to appear before the superintendent — or such other authority — for service evaluation, referred to in company terminology as "having his/her record read", at which time

A.3

DSR management exercised the peroqative/right to select motormen/conductors for specific lines that involved abnormal and/or unusual operating situations: Park Point, Incline, charters.

During the difficult war years, when manpower shortages became critical, there ~~were~~ occasionally were not enough conductors/motormen to man the minimum schedule requirements. In order to ~~monitor~~ very closely monitor these critical situations, the ~~to~~ together, requested a daily report from so that/working priorities could be implemented. In later years this responsibility was jointly resolved by the station foreman and schedule department.

Detailed rules in Spec. Orders #572 dtd 6-1-29 & #1405 9-12-35

4.4

WORK PAPER - (Lined)
FORM PT-9906 (3-1-64)

Standards of Operations, ~~platform~~

In 1930s ~~for instance approx~~ an average, ~~approx~~, of 10 spec Orders issued per week:

Special Orders ~~numbered 641 - 760 issued in 1928~~ covering a wide range schedule changes, operating practices, safety concerns co. policy, ~~human relations~~ personnel mgt.

Special Order "...Motormen and conductors will report to a proper official any defect in track or wire. If at all dangerous, such defect will be reported by telephone at first opportunity..."

~~Street and Avenue guide~~

Company policy on smoking from a letter Superintendent HH Brown 8-19-19: "...I told him (a motorman) that I was still receiving reports of him... smoking cigarettes while on duty, and that I would be looking at the list for someone to take that run as I did not tolerate any such conduct...."

~~Beginning in Nov. 1930, night operators turned in cash to starter's box to minimize losses from hold-ups.~~

The ~~WWI~~ drafting of men during the war years ~~brought~~ created shortages of personnel. On 7-17-17 the GM requested the Super to furnish a daily report of runs not run due to shortage of platform personnel. see 1.0

11aa Standards of Operation. Rule book

Operating department employees were called on the carpet regularly scheduled for performance review, evaluation analysis by the superintendent in his office (referred to by ~~mg~~ management as "reading the record", at which time employee demerits and deficiencies were noted ~~and reviewed~~, and opportunity given for ~~expression~~ discussion of suggestions for improvement of employee performance and service to the riders.

proficiency was reviewed and

~~Tests~~

Right and wrong way to operate a car. See 1928 memo giving cost ~~See~~ 3½¢ per mile of electricity to operate a car and other data

OVER

~~Gold braid~~ service stripes ~~furnished for each 5 years of service~~

~~During periods of considerable track work & street improvements, motormen were allowed to volunteer for duty as work car motormen in the roadway~~ (OVER)

where & when they were under the supervision of the roadmaster. (see 1.0

Operating in fog, heavy rain, heavy snow where visibility is reduced. "While it is desirable to have cars on time, it is a matter of secondary importance as compared to the avoiding of accidents and making our service safe". Superintendent.

Emergency stops, dead man control

"Winding up" the controller, ~~and~~ "notching up" the controller meant bringing the controller handle around to its maximum position so as to obtain the greatest amount of power from the motors. This was done in 8 steps, referred to as notches or points, on most controllers. Reaching the highest/greatest of these was referred to as being "on the brass".

Motormen and conductors were furnished a frequently updated "Street and Avenue Guide" for all lines in Dul & Sup
Its "Table of Contents" included "Instructions regarding passenger stops... railroad crossings... Street and House Numbering System."

A motorman's day began when he was expected to "show up" and "plug in" at station foreman's office ten minutes before scheduled pull-out time. He then checked the bulletin board for special orders, weather report, and announcements before going to his assigned car which shop personnel will have pulled up in front of station foreman's office and fitted with destination signs properly "marked up." His day ended when he parked his car in front of station foreman's office, and turned in his run card to the s.f.
A conductor's day began the day before when he was expected to obtain necessary change and tokens for the following day at the same time he turned in his day's receipts into the cashier. On the following day he "plugged in" much like the motormen. His only other additional duty was to obtain a sufficient supply of transfers from the transfer clerk before boarding his assigned car.
Both motormen and conductors working the "extra board" — those who did not have a regular assigned run —

Terminology West Duluth-Aerial Bridge was "straight piece"
Pull outs trippers (short rush-hour runs)
Pull ins
Turning back at 92nd Ave. W. instead of going to Morgan Park as scheduled was "switching short." / short line / turn-back: intermediate point on line

~~W~~ye the cars off west-bound lead into track #12, ~~then~~ pull forward then back cars into tracks #8 & #9 for brake adjustment, then to yard
Track #18 was for west-bound pull-outs.
Sensineco gave shopmen cigars to get a "good" car.

With the coming of one-man cars, duties of the motorman and conductor were combined into one person, commonly referred to then as the operator, who was not able to — and for safety's sake was not permitted to — perform many of these duties while the vehicle was in motion. The schedule department attempted to provide an additional minute or two to the normal 4 — 6 minute lay-over time at the end of each half-run.

On two-man cars, conductors could perform most of their duties while the car was in motion: count, punch and record transfers, record passenger counts and farebox readings, change destination/route signs, look through the car for lost articles, remove snow/ice from door wells (in snowy weather).

The night station foreman requested and obtained a weather report, which he typed in a prescribed form and forwarded to the Superintendent for whatever action he — the Superintendent — deemed feasable.

For unique utilization of conductors/motormen on the Park Point and Incline/Highland lines, see 6.36 and 6.35 respectively.

Coasting recorders installed beginning 2-12-18; tape recordings began 4-5-18 (see also 4.52d).

A well-matched pair — conductor/motorman — were the major ingredient in ~~boarding a maximum~~ efficiently boarding a maximum number of passengers

WORK PAPER - (Lined)
FORM PT-9906 (3-1-64)

II. Operations, Platform

Before the coming of the front exit cars (see 4.) and the one-man cars, (see 4.) DSR experienced the ages-old difficulty of getting S.R.O passengers to move to the front of the car. To alleviate the situation somewhat, motormen, in certain specific situations, were permitted to allow a limited number of passengers to enter thru the front (motormen's) door. However, passengers were strictly forbidden to ride on the front platform. In specific situations where a large number of passengers got off at one stop (school, circus, shipyard, steel mill), motormen were permitted to allow passengers to exit thru the front door. Inasmuch as this was a somewhat difficult, hazardous action, motormen were cautioned not to allow women thru the front of the car. These, of course, were pre-non-discriminatory days.

Special Orders provided specific instructions for the handling of anticipated large crowds. "All conductors & c-resses must exert every effort to handle their loads quickly and safely making use of their voices at all times to direct the movement of passengers..."

Regularly scheduled monthly meetings were conducted by the Operating Dept. at which company officials discussed a wide range of subjects, most of which related to operations. Two sessions, one for early shift and the other for late shift employees, also provided a period for discussion and question-and-answer period for operating personnel.

Final days buses trolley buses

Management was especially concerned about the ever-present hazard of broken or fallen trolley wires. Specific instructions were given to motormen/operators for the reporting of such situations, which, in turn, set procedures in motion for quick repairs by the roadway dept.

[redacted] last trips "-

put this on 6.24 beginning

"This is the way the world ends. Not with a bang but a whimper." "The Hollow Men"
T.S. Eliot

~~Superior destination sign for 24th Ave. E. changed from 24 to L 1-25-32~~

Nichod signals off 10-23-31

Wyoming Ave. on Billings Pk line

31st Ave. E. & 4th St on Allouez

52nd Ave. W.

College Ave. Kenwood

4.5

(1)

Inability to observe proper precautions and run on time will not be accepted as an excuse (in case of an accident) as (for) while it is desireable to have cars on time, it is a matter of secondary importance as compared to the avoiding of accidents and making our service safe.

...from a DSR Special Order to Motormen

DSR incorporated every known mechanical and electrical device, and procedure that would assure safe operation of the then newly-introduced one-man cars in Duluth in 1928. Nevertheless, management was concerned about the potential dangers of backing these cars, particularly the backing of cars on the Aerial Bridge line ~~backing~~ to and into Morse St. from Lake Ave. A Special Order dated March 31, 1928 gave specific instructions on how this must be done. Back-up controls were installed eventually and soon after on all one-man cars to facilitate the backing operations. × Apparently the dangers of backing cars at this highly-congested location prompted DSR to replace the wyeing operation with a loop soon after — in August (see also 2.11).

DSR ~~management~~ was very concerned also in the safe operation of the Incline. By-passing seniority lists, management selected, trained and periodically retrained the regular and substitute engineers (motormen) who operated the Incline. Detailed instructions were issued and frequently revised to maintain utmost safe operation of the INCLINE cars, even to the precise location of fare registers near the doors and control levers when they were relocated ~~and~~ in Jan. 1921.

INCLINE conductors were specifically instructed in the use of the air brakes when approaching Superior St. so as to make a "soft "loading" and to avoid "striking the air buffers too hard".

4.5 (2)

WORK PAPER - (Lined)
FORM PT-9906 (3-1-64)

3rd Ave. E. @ 2nd St.
accident 7-6-37

Safety ~~record~~

DSR's ~~had a remarkably excellent safety record~~ safety record was remarkably good considering the ~~extreme~~ great hazards of operating its cars on steep grades — up to 10.65% — and under ~~extreme~~ severe winter conditions. ~~There seem to be no recorded~~ Co. stds of operating proficiency were high (see 1.6) ~~However a mucky~~ At an early time, a serious hazard ~~resulted~~ developed when electric cars replaced the horse cars. Passengers who had become accustomed to boarding and leaving the relatively slow-moving horse cars, exposed themselves to great danger when they extended the same practice to the faster-moving electric cars which had open platforms with no gates or doors. a hazard that plagued all early operators of electric cars. The first known casualty was a Pete Nelson who was dragged and severely injured when he fell while attempting to board moving car #35 at 5th A.W. & Sup. St on 5-12-91. Less than 2 months later, ~~months later~~, on 7-7, Thom A. Broley, age 24, a ~~cat~~ recent arrival from Britain, & a member of the Duluth Foot Ball club, fell and broke his back while ~~trying to board a moving trailer~~ stepping from a moving car to its trailer ~~at in front of the of DSR's offices & shops~~ at 11th A.W. He died 3 days later, DSR's first passenger death. ~~DSR's benevolence became evident when it~~ A benevolent DSR assumed the costs of the funeral, casket, hearse and burial: $88

~~Surprisingly (when compared to later speeds) passengers periodically complained that street cars were sometimes being run downhill at too high a rate of speed. Fortunately, however, there are no recorded incidents of runaway car. The altho two teen-agers miraculously escaped serious injury, when the ~~ew~~ they crewless car they boarded and started at 11th St crewless single truck car crashed into an apt bldg at Second St after a fast ride~~

¶ Following the 1891 incident, DSR carried millions of passengers for millions of miles without a fatality until the fateful evening of Jan. 6 1927. 7 passengers were killed and a locomotive fireman and 16 passengers injured when a GN pass train struck car 169 inbound from Billings Park at the 21st St grade crossing at 8:05 p.m and disabled when it became trapped by the premature lowering of the crossing gates. An irate citizenry demanded that the use of one-man cars be discontinued on all lines in Superior. Although investigation of the tragedy at several levels of government failed to find DSR negligent, DSR & GN Rwy each device agreed to pay ½ claims: DSR $40,000.

~~Tho~~ Every possible mechanical & operating practice was incorporated in the operations of the 7th A.W. Incline. Ironically, the only known injury occured in the final year of incline operation (5-30-39) when a 20-yr old pass, ~~[illegible]~~ Oscar Hanson fell between the moving car & 10' after being rolled

119 No. 7th Ave. W

the a station, resulting, fortunately in only minor injuries; scratches & a broken finger.

WORK PAPER - (Lined)
FORM PT-9906 (3-1-64)

Operations Safety

last Nachod signal Oct 15, 1928 on New Dul line a station (2nd St.), resulting, fortunately, in only minor injuries: scratches, bruises & a broken finger. (Nels Holt ~~W. P. Nelson~~ conductor, Peter Rigsted engineer)

DSR was concerned about the hazards of 2-way operation of cars on its fortunately few stretches of single track, particularly Park Point, 57th Ave. W., Kenwood, Piedmont ~~New Duluth~~ Highland Ave, ~~and~~ New Duluth, Allouez, Billings Park, South Superior and on temporary single track during periods of street repaving. Standard procedure, even on those portions on which there were Nachod and Aimco (electric) signals, was the carrying of a right-of-way sign. This applied to all movements: pass. cars, work cars, & snowplows. Type C for one car only; type P for multiple cars In the event of any disruption in the prescribed procedure, the motormen was required to call in for instructions. These extra precautions seemed to have been justified: there are no known instances of head-on collisions — a tragedy that occured all too often on electric lines, sometimes putting them, big & small, out of business. This rule was relaxed for the safety-equipped one-man cars which began to appear in 1928.

The ever-present hazard of operating its cars on Duluth's steep hills required some unique operating procedures, among which was the strict requirement that motormen bring their cars to a complete stop with the hand brake only on each east-bound approach to 7th Ave. W. Motormen also were required to make safety stops when approaching railroad crossings, draw bridges, fire halls and fire runs.

go to XX

SPEED In a 11-17-1891 action, Council gave DSR authorization to increase the speed of its street cars on Superior St downtown from 6 to 8 mph
Speed increased from 8 to 12 mph by Council action 5-28-00

To promote safe operation of its cars, to encourage a competitive team spirit, and to recognize and reward "efficiency in accident prevention", DSR instituted a safety contest on ? March 1, 1928 Aug. 1, 1926 for Duluth Division motormen and conductors, establishing criteria for a quarterly point rating system and procedures for award distribution among operating employees divided into 11 teams. A similar contest was begun in the Superior Division Aug. 1, 1927. Several motormen and conductors had remarkable many-year records free of chargeable accident performance, giving DSR excellent public relations exposure.

go to pp (4)

Average operator, 48 hrs/wk operated "around the earth"

High on the list of positives that were featured in the design of the one-man cars were the greatly improved electrical/pneumatic control systems. Even after their introduction and trial operator training period, DSR continued a program of testing procedures for stopping & slowing its cars quickly under varying track conditions using normal air brakes, dead man control, or one notch on the controller in reverse position. Results of the tests are interesting and were disseminated to platform personnel.

4.5 (4)

Classification of accidents, charging of accidents, and appeals were handled by a "Safety contest committee". At the request of the employees, an individual accident prevention contest among individual employees was begun March 1, 1928, with certificates and cash bonus awards. 3 motormen 10 yrs., 4 motormen 5 yrs! On several occasions, DSR won first and second place/national awards; on these occasions an employee was chosen to represent "the fleet" at the National Safety Council Congress.

DSR's standard, double truck, two-man cars had open rear platforms (see 4.9). Management was concerned about the accumulation of snow and ice on these platforms & steps in wintry weather, and issued Special Orders to conductors reminding them of their responsibility to use brooms, scrapers and sand to reduce this hazard.

The contest was extended to ~~DSR~~ bus drivers when DSR entered competition with the National Fleet Safety Council on Jan. 1, 1932.
Duluth ~~DSR~~ bus drivers won National Safety Council Award in 1932, 33

Std cars, particularly those equipped with GE 200 motors, ~~K-43-F2 controllers and~~ 15:66 gear ratios and K-43-F2 controllers, had a try speed, on level track, of 37 mph. However, as might be expected, cars exceeded this speed considerably on long down-hill stretches. Although passengers complained to management when this happened, there are no known serious accidents resulting from reckless or improper operation of the cars, a truelly remarkable record.

Lightweight cars 301-305 had slower operating speeds, but greater acceleration, "touchier" brakes

Safety zones (in street)

4.5 (5)

quote pp 253 & 266 Ordinances
Horse cars 6 mph (I don't believe the mules could go any faster than that!)

In an era of a much slower pace, DSR was forced by law to restrict the speed of its cars. In a 12-8-1890 action, Council ordered DSR to restrict the speed of street cars on Superior St. downtown (5th Ave. W. to 3rd & E) to 6 miles-per-hour (and 12 mph elsewhere). On 11-16-91 this was increased to 8 mph. And one month after electric cars began operation on 5-28-1900 increased this to 12 mph.* Surprisingly (when compared to today's speeds), passengers periodically complained that the street cars were sometimes being run at a too high rate of speed.* Fortunately, however, there are no recorded incidents of runaway passenger cars, although two teen-agers miraculously escaped serious injury and death when the crewless car they boarded and started on 4th St. crashed into an apartment building at 2nd St. after a fast, out-of-control ride down 5th Ave. E. on Feb. 14, 1929. * The Operating Dept. was particularly concerned about the speed of its cars on down-hill grades (of which there were many in Duluth). A Special Order, dated Oct. 28, 1921 stated, "The attention of all motormen is called to that part of Rule 269... Cars must not be run down any grade of seven percent or more faster than some car and load can be propelled up same grade." Company records seem to indicate that Hartley Hill on the Woodland line was a favorite downhill race track.

go to XX on pp 5

Eff. April 15, '32 10 mph on E. Sup. St., 8th to 16th Ave. E. poor track

X DSR cars crossed railroad tracks at no less than ten locations in Superior, some of them being multiple track crossings, resulting in several grade crossing accidents and numerous near-accidents. Car 264 was demolished at the C&NW grade crossing on Hill Ave. and 13th St. only four months after it went into service. Fortunately, and almost miraculously, there were no deaths or serious injuries (except the 21st St. accident described above) from railroad grade crossing accidents.

XX Management was particularly concerned about the safe operation of its cars when extremely thick fog developed. In a condition that occurred frequently in D/S a time like that, the conductor was required to walk ahead of the car to determine, for and with the motorman, the safe progress of the car at places of possible danger: switches, single track, grade crossings, sharp curves, draw bridges, etc. For many years, a signal (by day) and light (by night) was displayed from the roof of a shipbuilding company's office to control traffic across the nearby Lamborn Ave. bridge. In foggy weather when the signal/light were not clearly visible, a flagman inactivated the devices and road on the platform of each passing car to assure safe passage.

To provide greater efficiency and eliminate a switchmans (tenders) exposure to great traffic hazards, DSR installed its first electric track switch on the east-bound Superior St. track at 3rd Ave. W. on Dec. 1, 1920 (see 3.18).

WESTERN AUTO CORRESPONDENCE

4.5 (6)

Western Auto ...the family store and CATALOG ORDER CENTER

Date

From

Address

City

At

Subject

XX The whole matter of maximum street car speeds was reviewed and liberalized by City ordinance in Oct. 1929. Maximum speeds were established by zones: closely built zones - 15 mph; traffic controlled closely built zones - 20 mph; residential zones - 20 mph. Although the city allowed 45 mph in certain undeveloped areas, DSR set a maximum of 35 mph for street cars.

Accidents 30 went into ship canal Sep 17 1893. Brake failure in 20 ft of water. Trolley rope was buoy. Raised 9/20

2/8/99 #20 3rd Ave. W.

5/15/99 collision at Garfield & Sup. St.

5/2/1900 #56 pulling 2 trailers of ties ran wild on 3 AW.

12/28/01 #74 struck by switch engine on Garfield Ave

3/29/01 #61 & work car at 40th A.E.

8/5/02 line car accident Lake Ave & Sup St

10/20/03 work car " Jenswold St

11/25/03 #56 & d-t at 3rd AW & Sup

11/6/06 #130 struck by DSS&A train at 21st St

2/12/07 #81 ran into LST&T (train freight) on Tower Ave.

12-11-07 So. Sup. car struck by DSS&A at 29th St.

9-21-17 #264 destroyed in rr accident CStPM&O at Hill Ave. & 13th St.

10-30-25 Halloween pranksters over-turned Birney car on Kenwood loop. No injuries to motorman & 4 pass.

7-6-37 Rear end collision on E. 2nd St at 3rd Ave. E. no injuries

? 1-6-27 GN Gopher struck 169

~~Service improvements:~~

~~after merger Aug 27, 1900~~

~~use of 80# rail 1/1/01 welded~~

~~first d-t cars, loop wyes 10/4/01~~

~~demands for improved Woodland service 12-26-02~~

~~2-1-05~~

~~editorial on winter time comfort of d-t cars~~ 2-1-05

PT-5230 (Rev. 12/15/64)

4.5

Accident Report*

For 1938 (last full year of street-car operation)

Miles operated street cars	1,786,591
" " trolley buses	678,987
total miles	2,465,578
" accidents	839
Number accidents per 1,000 miles run	.34
Miles operated gas buses	2,224,767
Total accidents	281
Number accidents per 1,000 miles run	.13
Grand total all miles run	4,690,345
" " all accidents/1,000 miles	1,120
Number accidents per 1,000 miles run	~~.24~~ .239
" " all bus "	~~1936 1940~~ 1939 ~~.22~~ .268

* Includes all types of accidents:
collisions, ~~of~~ all sorts injuries, ~~of~~ all sorts boarding/alighting, disturbances

WORK PAPER - (Lined)
FORM PT-9906 (3-1-64)

Operations Interuptions

4.6a Interuptions of scheduled service resulted from many causes, a list of which would be quite lengthy. These can, in a general way, be placed in two classifications: equipment failure and external forces.

6.6b By far large equipment failures caused the larger proportion of schedule interuptions. In some few situations, it was necessary to couple onto and push the disabled car to some point where it would clear the line. In most instances, however it could operate — perhaps in a limited manner — to a pre-arranged point where passengers were transferred to another, replacement car. This, in the industry, was (and is) referred to as a car change, a procedure specifically spelled out in Special Orders with diagrams and maps.

goto 8x on 6.6 (2)

Electrical (motor, controller, wiring, trolley etc.)	368
Air (compressor, governor, brakes, piping, sander)	34
Trucks (wheel, axle, bearing, hot box)	41
Body (door, step, safety equipment, lighting, sign)	105
Misc (accident damage, lightning, operator)	102

6.6c But there were many other external causes for schedule interuptions, most of which were, beyond management control or rectification, and which are listed here with no particular reference to frequency or duration: power failure, broken trolley wires (39 in 10 months), improperly parked or stalled autos and trucks, broken trolley wires, vehicle accidents, personal injury accidents, fires, bridge openings, street parades, railroad crossings, winter-time hazards (see 6.19) and hazardous track conditions (see 6.20). Most frequent, frustrating and disruptive were service interuptions, particularly if the occurance was during the

4.b (2)

Service interruptions

frequent, frustrating and disruptive were service interuptions caused by fires, particularly if the occurance was during rush hours.

Put this in 6.20

Of note — but certainly less frequent — is this service interuption memo from Superintendent Byers: "We have had considerable trouble the last ten days with boys committing Hallowe'en pranks and especially pulling the trolley off..."

As an effort in positive public relations, DSR inserted a column in the daily newspapers, explaining previous day service interuptions and, in some instances, notice of anticipated interuptions.

To minimize service interuptions during periods of extensive track repairs and/or street pavings, carefully coordinated plans were instituted by and between the operating, roadway and mechanical department heads, and providing specific instructions for motormen/conductors.

XX Disabled street cars in these situations, were — and are — referred to as "pull-ins". In 1936, for instance, DSR tabulated the following pull-in defects in a 12-month period:

Electrical (motor, controller, wiring, trolley)	368
Air (compressor, governor, brakes, piping, sander)	34
Trucks (wheel & axle, bearing, hot box)	41
Body (door & step, safety equipment, lighting, sign)	105
Miscellaneous (accident damage, lightning, operator)	102

By dividing the total number of miles operated by street cars (2,097,000 in 1936) by the total number of defects/pull-ins (448 — miscellaneous not included in these tabulations) resulted in an "average miles per pull-in" (4,681 that year). This figure was — and still is — a critical, industry-wide measure of service. Equipment failure is directly related to the quality of maintence of that equipment. A capable management, striving for good transit service/operation would, hopefully, take a hard look at its maintenance procedures if that figure took a downward trend. DSR did.

6.6 (3)

Service interuptions

Although the strike ended 11-6, full service was not restored until 12-1.

~~May 2, 1899~~ ~~to~~ 4 day strike in Sep 1893

During the violent and lengthy strikes of 1913 (9-9 to 11-6) DSR attempted, as before, to furnish service using management personnel protected by sheriff's deputies, and the placing of screens over car windows. DSR/R Railroad furnished temporary Lester Park service: 7:05 a.m. and 5:6, 7 p.m. departures. Fare 10¢.

6.6h Service interuptions resulting from work stoppages were no strangers to DSR operations. These are detailed in 1.8.

6.6f On Nov. 9 (1918) the city Health Dept. placed a strict quarantine on the city which, in effect, was to limit the movements and assembly of its people as a means of controlling the spread of the deadly Spanish Influenza epidemic which had spread across the country. DSR conductors were ordered to allow only 35 passengers on the cars, severely reducing passenger traffic — and earnings. The city Health Dept. ordered a limit of 50 passengers per car in Duluth and Superior. The passenger revenues for the months of Oct., Nov. and Dec. 1918, instead of showing a normal increase over the corresponding period of the preceding year, showed an actual decrease of $38,933, and a conservative estimate of the loss in revenue to the company due to the epidemic would be $50,000.

6.6g Service was completely suspended on the 7th Ave. West Incline following the tragic fire on May 28, 1901. A reduced service began July 1, 1902. Service was again interupted for a month during a major rebuilding of the incline 5-14 to 6-10-1911. These are detailed in 2.8 and 7.6.

6.6d The passage of ships through the Duluth Ship Canal during the navigation season caused frequent interuptions of service on the Park Point line. These are detailed in 6.36.

6.6e The passage of ships through the Duluth-Superior harbor during the navigation season caused frequent — and sometimes lengthy — interuptions of service on the Interstate line. The collision of errant ships with the Duluth-Superior (Interstate) Bridge required the immediate institution of substitute ferry service. These interuptions are detailed in 6.43.

6.6i Among unusual tragedies were the forest fires of northern Minnesota that roared into the city's fringes on Saturday evening 10-12-18. Wind-borne embers did considerable damage in the city, not the least of which was the destruction of the north approach of the D-S Bridge (see 6.43), halting use of the bridge for a month and isolating DSR's two divisions. Street cars in the suburbs rescued many who were driven from their homes by the rapidly on-rushing flames. The Duluth Herald of 10-19 gave this account of one incident: (see scrapbook this date)

the deadly Spanish Influenza emidemic. Conductors on DSR street cars were ordered to allow only 35 passengers on their cars

May 2, 1899
"... the strike ... is greatly hindering the transaction of business and causing the greatest inconvenience to the public ... (and) ... the City Attorney be directed to take action ... to compel the St. Ry Co. immediately to furnish sufficient cars to accommodate the general public ..." Council Resolution of May 9 referring to strike of

4.6 (4)

4.6j DSR made diligent efforts, and zealously persued every possibility — through cooperation of the various departments of the company — to reduce and eliminate such interuptions of service. Specific Special Orders and instructions were provided and updated, prescribing procedures for reporting such occurances and restoring service with minimum delay. A 1930 "Summary of Delays" shows that in that year the average delay over 5 minutes of all cars was only .66 minutes. For the Interstate line (see 6.43) the average was 1.02 minutes, most of which was caused by the opening of bridges for the passage of ships.

6.6k As an effort in positive public relations, DSR inserted a column in the daily newspapers, explaining previous day service interuptions, and, in some instances, notice of anticipated interuptions.

Switching short: turning back before reaching end (terminal) of the line because of running behind schedule, equipment malfunction or failure, etc. Complex rules governed the determination and procedure of switching short, with priorities placed on minimum discomfort/inconvenience to passengers

4.6
~~6.20~~ (1)

Other ~~accident~~ operation hazards/interuptions

Late winter and early spring brought the threat of freezing rain (often incorrectly referred to as sleet storms, but more correctly as ice storms) when ice-coated trolley wires severely hampered operations, and heavy coatings of ice caused trees, poles and wires to fall. (The ice storm of March 5, 1935 was so severe that the Allouez trolley line was abandoned on that date when much of the trolley wire and poles fell due to the great weight of the ice coating.) Procedures during an ice storm called for the use of ice cutters attached to the trolley wheels, and the running of extra cars — all night, if necessary — to reduce the build-up of ice ~~coating~~ on the trolley wire. With the expediant use of a step ladder, a special crew at 3rd Ave. W. quickly attached the cutters to cars as they passed that point.

The welcome coming of spring, ironically, and in less pleasant ways, brought no less operating problems. The water from melting snows, mixed with the salt used on the streets and tracks, produced a troublesome solution which caused electrical malfunctions in motors and wiring, and to mechanical parts as it froze, go elsewhere xx

~~Though~~ Beautiful to behold was the Fall splendor of leaves. Though the season was of short duration, DSR was concerned about the hazard that fallen leaves created along tree-lined street car tracks, especially on the hill lines. Of concern also were the seeds that fell from elm trees.

4.6 ~~6.20~~ (2)

When circuses came to town, which they frequently did each summer, their arrival usual produced a circus parade which invariably disrupted ~~st~~ car operations along the parade route. And motormen were reminded ~~(by~~ Speed Order ~~that~~ most circus wagons were extra wide.

~~Most frequent, frustrating and disruptive were service interruptions caused~~ by fires, particularly if the occurrence was during the rush hours. Of note — but certainly less frequent — is this service interruption memo from Superintendent Byers: "We have had considerable trouble the last ten days with boys committing Halloween pranks and especially pulling the trolleys off." ~~Though of short duration, the season of~~ fallen leaves produced a hazardous condition on the "hill lines" and especially so if a light rain should fall, necessitating round-the-clock operation of the sand car(s). And prompting the public works commissioner of Kirkwood, Missouri (St. Louis) to bitter verse regarding his ~~c~~ street sweeping problems, here slightly paraphrased:

Reproduce S 01080
10-12-31

On Turning an Old Leaf

Kirkwood, Mo. (AP) — Problems with leaf collections caused by a new ban on leaf-burning moved Robert L. Murphy, Kirkwood city councilman, to bitter verse.

Murphy, also public works commissioner, recited at a council meeting:

I think that I shall never see,
A thing as ugly as a tree.
With all it's branches, twigs and leaves,
Over which the street department grieves. railway
From dawn to dusk and dusk to dawn,
The ~~vacuum unit~~ sand car rolls on and on.
'Round the city streets it's sweeping, creeping
Waking all the folks who're sleeping.
Soon autumn will end—all will be bleak,
And our men needn't work a 7-day week.
I think that I shall never see,
A thing as lovely as a tree—
with But no damn leaves at all.

~~Hazardous~~ conditions were not the only rail-related conditions. Cars tended to squeal as they rounded sharp curves. To minimize this nuisance, DSR employed "curve men" who daily greased the curves and swept debris out of switches and flanged rail.

To minimize service interuptions during periods of extensive track repairs and/or street pavings, carefully coordinated plans were implemented by and between the operating, roadway and mechanical departments, providing specific instructions for motormen, conductors and supervisors.

** resulting in more than double the average number of equipment failures.

The company records show little evidence of the type of vandalism that would result in interference with its operations. Halloween seems to have been annually troublesome, and on that occasion only, it appears, line foremen and other supervisory personnel were assigned to specific areas of the city to monitor the situation. A recap report of one such evening bore this footnote, "Woodland was the worst."

WESTERN AUTO CORRESPONDENCE

4.6

Western Auto ...the family store and CATALOG ORDER CENTER

Personnel

Date

From

Address

At

City ~~Steel Plant changed to Billings Park 2/5-03 (2-6-23)~~

Subject

~~Mail 10/27/98 12/22/98~~

~~Funeral car 5/6/03~~

~~Car speeds~~

~~Slow - fast cars~~

~~Safety~~

~~Express (limited thru) cars to Hunters Pk. using 3-4 cars 12/22/03, 12/28/03-23, 3/15/05~~

~~Traffic congestion at 3rd & Wes Sup 10/8/03~~

~~Car starter 12/15/93~~

~~Speed of cars Nov 16, 1891 the Council authorized DSR to increase car speed on Sup St downtown from 6 to 8 mph~~

~~increased from 8 to 12 mph by council action 5/28/1900~~

~~Car starter 12/15/93~~

~~Use of air whistles on cars 12/2/03~~

Strikes 3 day strike of carmen 9/1 to 9/3/93. Reduction of 10% in pay Compromise settlement:

Settled Sunday midnite. Cars ran Monday a.m.

May 3-16, 1899 violence

Hiring age of motormen/conductors was 25 to 40 in 1897

PT-5230 (Rev. 12/15/64)

WORK PAPER - (Lined)
FORM PT-9906 (3-1-64)

On a Sunday in late June 1902, 55,000 fares were collected in Duluth. This is all the more remarkable when it is realized that only 12 double truck cars had entered service. At that early date

16 h Passenger traffic

On July 4, 1904, 108,426!

(2) It is difficult, in this era of the intense use of the private automobile, to visualize the movements of large crowds by st. car to & from ball parks, circus grounds, fairs, carnivals, religious gatherings, parades, spectator sports, picnics and other events. On one day in 1919, for instance, Duluth observed "The Fourth of July" with parades downtown and in West Duluth, carnivals at Lester Park & Fairmount Park, a water regatta on Park Point, a community celebration on Dul. Hts., & church picnic at Lincoln Pk. DSR was hard pressed to handle the great crowds so widely dispersed in the city. Every car that could turn a wheel was put out on the streets. Roadway dept. motormen & conductors and qualified office personnel were drafted for duty on the cars. The Superintendent's supervisors & line foremen were responsible for specific areas of the city, assisted by shaymen from the Mechanical Dept as trouble-shooters. Work cars, wrecker and tower car/truck were at the ready with crews in the event of equipment failure. On the day following one such event the Supt wrote, "We have had no complaints so far today about the service (yesterday) but we have had a great many compliments. We had practically no accidents... and considering the passengers handled, I believe the men are entitled to a great deal of credit." Even shaymen were stationed at railroad crossings to flag the overloaded cars, and at busy track intersections to throw the switches, and handle the trolley poles in non-regular car movements. The logistics that went into operations like this are astounding, too. It was no small matter, for instance, to arrange to feed these many personnel who worked long, overtime hours. "It was a busy day for the street railway employees, and all of them had to work overtime, some running up to 14 or 15 hours." (from the DULUTH HERALD).

See bottom of pg 4

(1) Man, the social animal, is at his best when polished by contacts with others. Those contacts - education, vocation, business, recreation, religious or whatever, were made possible in large measure by the street cars.

(3) Co. records and recollections of former employees indicate very few problems in the handling of passengers. Wartime (WW I) shipyard crowds became occasionally difficult to handle on the Riverside-M.P. line. Saturday nites sometimes brought anxious moments for crews on the Interstate line when the volatile mixture of Superiors 3rd St night club patrons mixed it up with shore-leave sailors. Conductors & motormen kept switch iron handy. Although women (conductresses) were strictly forbidden to work the Interstate line, a select few were permitted to work an occasional Sunday day-time only pull out to the Superior Fair grounds.

4.7

~~Stock~~ Superior (Belknap & Tower)
starter discontinued
May 19, 1930

4.7 (2)

WORK PAPER - (Lined)
FORM PT-9906 (3-1-64)

Passenger Traffic

In the peak year, 1919, DSR carried 38,474,440 passengers, operated 5,538,842 car miles, employed 670 persons

3c The ~~late~~ war years and early post-war years placed great burdens on DSR. Reopening of the shipyards on Oct. 8, 1917 at Riverside and increased production at the Morgan Pk steel mill placed unprecedented demands on both DSR and NP Rwy. New cars were no longer available. DSR was fortunate in being able to obtain 6 used cars from TCRT with the aide of the govt agency, War mobilization made it extremely difficult for DSR to hire and retain sufficient personnel in all departments. EFC and leased 6 more from TCRT (see 6.) 20 women were hired as conductresses (6.3). to relieve war-time labor shortages. ¶ From a supervisor's time sheet of Monday morning 9-4-19 we find these interesting figures: in a 1 hr & 5 min. period, from 6:46 to 7:51 a.m. 30 cars, carrying about 2600 passengers, passed 57th Ave. W. westbound for Riverside, Morgan Pk. & New Duluth, a car every 2 minutes, an average of about 87 passengers per car (rated at 45 seated passengers). In the 19 min between 7:09 & 7:28 13 cars passed with no less than 75 passengers on each car. One car, with 120 passengers, had a student motorman! An interesting aspect of this operation is found in the fact that only two cars were running late: 2 min... a truly remarkable demonstration of expert scheduling, dispatching, platform performance and downright good railroading. ¶ However, in spite of these herculean efforts of management & crews, the record is darkened by a few reports of demonstrations and near-riots by angry crowds trying to board the cars of the overtaxed system. The trend to faster schedules, made possible by newer equipment, was offset somewhat as extremely heavy loading slowed operations. A minute was added to the running time in both directions on Sup. St. between 3rd & 8th Av. W., & additional time was added to ~~selected~~ some out-bound evening rush hr. runs. Some relief was gained when the Northern Pacific Rwy. began a shuttle operation between Union Station and Riverside on Nov. 1, 1918.

* Fare registers on cars inbound from Grand Ave., ~~for instance~~, passing 8th Ave. W. between 8:15 and 8:40 had these readings (passengers carried): 71, 125, 103, 87, 66, 147, 118, 92. * see bottom of pp 6.7 (4)

The "biggest" day in the history of the company, however, was 2-15-27, the day of the [redacted]ter Frolic parade, when fares of $8,085 were collected. (At a fare of 6¢, this would have been 134,754 revenue passengers.) The Tri-State Fair generated considerable traffic on the South Superior line. During the one-week Fair in 1934, for instance, 43,000 passengers were carried, too from the Fair, on DSR's cars. (go to XX)

~~Car starters as early as 1893~~

Starter Box, 3rd Aver. W.:
part-time/rush hour only
eff. 3-29-38

b.7 (3)

PAYE allowed conductor to stay near rear gate, beginning 1924
The starter utilized a system of colored lights to signal cars to proceed:
orange westbound, green eastbound, and blue downbound (on 3rd Ave. W.).

(12) "Car starters" were utilized by DSR as early as ~~1893~~ 2-15-92. This rather inadequate/ambiguous terminology referred to supervisory personnel stationed in booths at 3rd Ave. W. & Superior St. in Duluth and, on the northwest corner of Belknap & Tower Ave. in Superior, whose duties, in addition to "starting" cars, were to note the passing of cars, recording the time of passing (early, late or on time), and performing a liaison between station foremen/supervisors/superintendent and car crews, particularly in times of service interuptions or threats thereto (as detailed in b.b.). Superior starter terminated 5-20-30. Additional duties of early-day car starters at 3rd Ave. W before electric switches less hectic (Dec. 1920) was switchmen, a

(5) XX There were other, occasions — the Christmas shopping season, Easter Sunday, New Year's Eve — when DSR advertised and provided extra service. One such event, for instance, were the ski tournaments on several winter-time Sunday afternoons in Chester Park, when regular service on the Kenwood Ave. line was supplemented with enough additional cars to provide a two-minute service (headway). Several cars also made through runs from Superior; these were "banked" in the Cleveland Ave. gravel pit until needed for the return trip to Superior

see elsewhere!

(6) XXX DSR was sensitive to complaints. A 10-year recap (1920-1929) lists an interesting variety of complaints, the greatest frequency of which were disputes over fares and transfers, connections at transfer points, carrying passengers beyond destinations, running by passengers, and lost articles. Surprisingly, there were few complaints of delays or service interuptions. And practically no complaints of inept employees, although some passengers felt that they had been treated less than courteously.

(7) On one occasion the Superintendent had this to say about the erring actions of motormen, "... they can do more to kill the good will of the street car (company) than any campaign can build up."

(8) Of note are these major service improvements:

July 1, 1890	Electrification in Superior
Nov. 3, 1890	" and conversion to standard gauge in Duluth.
Sep. 1, 1897	Operation began over Duluth-Superior (Interstate) Bridge
Mar. 28, 1899	Superior portion of Interstate line converted to standard gauge.
Aug. 13, 1900 — July 1, 1901	Merger of all affiliated lines in Duluth and Superior (except Park Point).
July 1902	Restoration, major upgrading of track and conversion to standard gauge in Superior.
June 1899	Electrification and conversion to standard gauge on Park Point
Feb. 23, 1905	Aerial Bridge built
June 2, 1901	Double-truck cars began operating in Duluth-Superior.
July 1, 1917	Park Point line acquired by DSR
Mar. 12, 1930	Aerial Bridge double-track span replaced original operation
June 10, 1911	Two large cars replaced one small, inadequate car on 7TH Ave. W. Incline
1901	To accomodate the new, large double-truck cars, DSR began using 79# 8" rail with welded joints. In this year, this heavy rail was used as a replacement on E. 2nd, E. 4TH, E. Superior, W. 3rd St. and Lake Ave. lines

(10) From an early time not known, DSR hauled prisoners from the central police station to the county jail. Passengers complained about this practice, and this practice was terminated in Duluth in April 1911, and in Superior in 1926.

4.7

As motormen became ever more preoccupied with increased street traffic, traffic lights, stop signs and faster schedules, less attention could be given to passengers wishing to board their cars. DSR Superintendent of Operations reminded motormen, in a Special Order, that "(although)"... it is very important to keep cars as close to scheduled time as possible,... street cars are run to carry passengers, and the most important thing is to get all the passengers possible..." even if an additional 22 seconds of time are lost — the cycling time of a traffic signal.

Oct 19, 1932 Wednesday DSR's first free-fare day 9–11:30 a.m.

With seating of 00 on Incline cars, capacity of 76 passengers were carried on occession: 1-23-38, also 12-41-38 @ 1.05 p.m.

Car starter a misnomer; tried to resolve service problems: cars running late, cars with mechanical problems, ulilized turnbacks, order replacement car, order emergency truck

From the beginning of street railway operations in July 1883 until the coming of the rebuilt single end cars in June 1899, all cars — horse cars and electric cars, narrow gauge and standard gauge — were built for double-end operation. (See 5.42) Horses were unhitched and rehitched on the opposite end of the car for its return half trip. Likewise, trolley poles were reversed and controls taken to opposite ends of all electric cars for their return trips

With the coming of the double-truck, however, it was necessary to build loops and wyes to turn the cars. The first of these

With the rebuilding of double-end cars to single-end operation beginning in June 1899, and with the coming of the

Crossovers were provided at the ends of double track lines.

double truck cars in 1901, it was necessary to provide loops and wyes to turn the cars. The first of these ~~were~~ were wyes at 62nd Ave. W. & Raleigh St. and at Morse St. in July 1899

4.5

Nachod signals

also on

Lake Ave.

Billings Park

Allovez

Nachod signals
Piedmont used Type P
All others used " C

Nachod signal on Lake Ave.:
type P hand operated, one car,
until Aug. 9, 1934
then type C which allowed
~~more~~ more than one car going
in same direction

The steamer Merton S. Farr
hit the Interstate Bridge
on Nov. 23, 1924

Failure of 304-305 cars on hills in Duluth due to overheating of motor field coils.

As early as March 1929 DSR had consulted with GE re this problem.

~~4.6~~ 4.7

Before the coming of electric track switches (see 3.18) DSR employed "switchmen" to "throw" ~~the~~ switches during rush hours at 3rd Ave. W. & Superior St., 8th Ave. W. & " ", 5th Ave. E. & 4th St., and Garfield Ave. / W. Superior St

4.10

Limited Trips changed to 5:09 8-1-17

2 Woodland 5:27, 5:37

1 Hunters Pk 6:06

3 Lester Pk 5:37 5:46 5:52

2 stops to 3rd Ave. W, then Lake Ave., 3rd, 12th, 18th, 24th Aves E. & all after 24th

Effective 6-30-17

4.10

Owl car service began July 1, 1910

4-11

9 cars, 189-196, 262, were equipped (as an experiment?) with turnstiles in May 1926

4.11

"New transfers" June 15, 1935

4.11 9-15-17

News agents allowed to ride free and sell only: D News Tribune, D Evening Herald, Finnish Daily News

Police of firemen in uniform ~~[illegible]~~ 4.11
carried free
Mail carriers carried on DSR

cars in 1913

Duluth 131

Sup 21

~~$20 annual fees for mail carriers~~

~~in uniform in TC~~

Correspondence between the Duluth from 1913 thru 1928
Post Master,
Letter Carriers Assoc, Chamber of
Commerce, State Attorney General (legal aspects) & various levels of

DSR management never resolved
the problem of reduced-rate fares for
letter carriers in Duluth

4.11

General transfer zone was extended to 8th Ave. W, ~~4th Ave. E.~~ ned to 4th Ave. E. on both Superior St. & 2nd St.

4.11

Superior City Bus Co. trackless
put in use eff 7-13-31 on
So. Superior and Broadway lines

Transfers 4.11

3 new D-S Coach Co

transfers issued

~~eff~~ May 3, 1930

WESTERN AUTO CORRESPONDENCE

4.13

Western Auto ...the family store and CATALOG ORDER CENTER

Date _____

To _____ From _____

Address _____ At _____

City _____ Subject _____

a few more to go as yet

Duluth Daily Tribune 11/9/1890 "Last evening" car 28 ran 28 steps in 14 minutes, 24th Ave. W. to 8th Ave. E "Everything ran to precision"

" " " 12/22/1890 Full service. 4th St to 10th Ave. E. And on Soy St to Montana Ave. And extended 24th to 28th Aves. W

WORK PAPER - (Lined)
FORM PT-9906 (3-1-64)

I Routings & Schedules General

The seldom-changed routings in Superior — and in the Twin Cities — were in marked contrast to the frequent and sometimes extensive changes in Duluth. The unusual and unique situation in Duluth of all cars passing a common point (with its advantages & disadvantages) (see 3.23b) provided a flexibility of routings enjoyed by few st. rwys. The net result was an ease of route adjustments to match demographic changes and traffic changes. ~~Interesting to note that~~ The Interstate line was the only one to remain relatively unchanged — for 38 years. And, except for the first few years of operation, the W.D-A.B. line the only long-time unchanged routing combination in Duluth.

The horse cars (1883-1890) operated over a single route on Sup. & Mich Sts., extending eventually from 28th A.W. to 22nd A.E. (see also 2.2).

The initial electrification and extensions in the early 1890s provided the following routings and frequency of service (headway):

The W. 3rd St. line became operational in 1896, and the Interstate line became a reality when DSR began operating its cars over the newly-built D-S Bridge on 9-1-97. On that date, major changes became effective in Duluth:

West Duluth to Aerial Bridge

Interstate to 22nd Ave. E.

W. 3rd St. to E. 4th / Woodland

Lakeside to 5th Ave. W.
W. 4th to 12 Ave. W.

5 minute headway beginning 5-11-1888

→ West Duluth (Oneota St.) to East End (Superior St. & 22nd Ave. E.)

Garfield Ave. to Aerial Bridge 2 min. headway

8th Ave. W. to Lakeside. 8th Ave. W. to Woodland / E. 4th St

~~E. 4th St / Woodland to 12th Ave. W.~~

W 4th ?

With the coming of 1-man cars 4.14
in Duluth.

Routing changes

effective June 14, 1929

Interstate to 12 instead of 52

Crosley from local points

2-man cars Piedmont to 4 instead of 22

1-man cars will be run from 9, 57, 71, 8 to 61, 52, 7, 22

4.14

Second base runs eliminated
(decline in passengers)
Jan 1, 1920

also

All owl cars eliminated
~~Sept~~ Oct. 1920

WORK PAPER - (Lined)
FORM PT-9906 (3-1-64)

4 Horse cars ½ hr headway

The earliest electric car (1891) schedule ~~20 min headway~~:
on Tower 3rd to 21st 6-8 minute service
on ~~East End~~ 15 " "

Routings & Schedules

Superior. In the early years of recorded Superior operations (1902? 1900-10), B. Iliner Park cars, on a 30-min headway, terminated on the carhouse loop at 3rd/4th Sts & Ogden Ave. So. Sup. cars, on a 30-min headway, were routed to 3RD & Grand via 6TH St, known as the 6TH St. Loop. EE cars, on a 20-min headway, terminated on the carhouse loop, same as the B. Pk. cars. The Allouez line operated as a shuttle during its first 4 years of operation (1907-11), passengers transferring to & from EE cars at Robertson (31st & E) & 4TH St. In 1911 a 20-minute service was scheduled on all lines; this provided a 10-min headway on the EE line. And a car every 5 min on Tower Ave. A complete re-alignment of routes occured when the Broadway line was opened in 7-'17, and thru-routed with the B. Pk. line. The So. Sup. and E. E. lines thereafter terminated on the Ogden Ave. carhouse loop. Thru service was provided on the Allouez line, it being thru-routed with the 6TH St. Loop, providing, as before, a 10-min. service on the E. E. line

To provide service for the midnight shift change at the Allouez ore docks, owl-car service began June 28, 1913.

70 trains a day to & from Duluth
20 " " " " West Duluth
44 " " " " East Superior
8 " " " " South " "
7 ferry boats operated to & from Duluth

Interstate In 1893 2 minute headway

Altho the Sup. Div. had reduced its scheduling to a bare-bones operation during the postwar years of "general business depression" (passenger figures) a 20-min headway was maintained on all lines. They came uncontrolled Jitneys, and increased use of the private automobile also took their toll. ~~Superior~~. Beginning in (8-24-29) Interstate cars, on a 10-minute headway, began a local operating function in Superior by making alternate trips to South Superior and East End, making it possible, therefore, about ½ to maintain a 20-minute headway on those two lines. With the abandonment of the BDWY and So. Sup lines on 6-25-31, INT cars were routed to Bld Pk. This, in turn, was changed to E. E and Allouez on Nov. 29. BP cars then ran to the 4TH & Ogden loop

4.16

Superior destination sign for 24th Ave. E. changed from 24 to L 2-25-32

Closed Pouch (mail)

4.17 (1) Carrying of Mail and Newspapers

DSR's franchise specifically limited its operations to the carrying of passengers, Section 1 stated, "... said tracks & railway shall be used (only) for the purpose of transporting passengers..." There seem to have been some exceptions to this limitation. P. Large quantities of morning and evening editions of daily newspapers were picked up, carried on the front platform of cars, and dropped off at designated places in the suburbs. Especially heavy loads of Sunday morning papers were carried on the Lester Park and Woodland cars, often overflowing into the passenger compartment. One man cars, etc. Last papers carried 9-13-35.

2a & b The carrying of U.S. Mail was a federal mandate:

However, the records indicate that DSR was carrying U.S. mail to West Duluth, Lakeside and Hunters Park as early as 1898.

Mail sacks and pouches were carried on regularly scheduled cars between the main post offices in Duluth and Superior and the several branch offices, and between branch offices. In a director's meeting Sep. 30, 1901 it was resolved that DSR would provide "... for the transportation of the U.S. mails on any of its lines in Superior, in Duluth, and on its line connecting (the two cities)." Cars carrying mail displayed a "U.S. Mail" sign in the front window.* Cars 242-254, which had front platform sliding doors (see 4.43), were preferred for carrying mail and newspapers.

DSR carried the mail under Interstate Commerce Commission route number 310107 which required "... 30 cubic feet of space in a (street) car" for "pouches, sacks and packages." DSR filed monthly reports to the Division Superintendent of Rury Mail Service certifying interuptions/failures, if any, in performing the service as specified. On a typical day, mail was carried as ffls: 2 trips each way between 5TH Ave. W. & Hunters (Duluth Main P.O.); 4 trips from 5TH Ave. W. to West Duluth, Morgan Park & New Duluth, and 3 trips in the opposite (inbound) direction; 1 trip from Duluth to Superior; 2 trips from 14TH St. (Superior Main P.O.) to South Superior and 1 trip in the opposite (inbound) direction; 2 trips from 14TH St. to Billings Park and 1 trip in the opposite (inbound) direction; 2 trips from 14TH St. to Allouez/Itasca and 1 trip in the opposite (inbound) direction. Some alterations were made in Saturday/Sunday/Holiday service. On occasion, and particularly during the Christmas mailing crush, an extra man was assigned to the West Duluth/Morgan Park trip to assist the motorman in the handling of mail sacks. In June 1909, DSR refused to continue to carry the US mails in Superior without compensation. An agreement was reached 3 months later for DSR to receive payment for this service, and carrying of the mail was resumed.

3 Company mail pouches were carried on the cars daily between the Superior and Duluth company offices

~~4.5 See 6.18 11~~ 12

Effective Oct ~~13~~ 21, 1935 DSR discontinued carrying all US Mail ~~except~~ in Duluth & Superior ~~the 12.28 p.m. Duluth to Superior trip~~

6.17 (2)

between Duluth Sup, and between Dul & "Lakeview".

2b In 1898, DSR received $62.50 quarterly for carrying U.S. Mail for [illegible] 31 years later, in 1929, DSR was still being paid the same amount per quarter for carrying mail between Duluth Sup. and between downtown Duluth & Lakeview. On a typical day, 7-1-29:

arr	58TH A.W postal substation	at 7:01	dropped off 1 sack picked up 6
"	MP	7:19	9
"	ND	7:33	6

And 42 passengers

U.S. Mail and newspapers were normally carried on the front platform of the two-man cars, where maximum security was provided for the mail sacks and pouches, and where loading, storage and unloading of mail and newspapers did not interfere with the movement, safety and comfort of the passengers. Dogs were carried on the rear platform of two-man cars, where they, too, and their handlers interferred little with other passengers. However, the coming of one-man cars created a different situation. DSR was no longer able to meet the security requirements of the Mail Service, or to suitably provide the other conveniences of space and services. Management was well aware that the one-man cars were not popular, and to restrict or refuse to offer these services on one-man cars would be even more unpopular. The matter seems to have resolved itself when the U.S. Mail Service and newspaper publishers eventually provided their own trucks. Carrying of the mails was considerably curtailed Oct. 13, 1930 and the mail-carrying contract terminated on Oct. 20, 1935, resulting in some ill-feeling among those who had enjoyed the service so dependably provided.

There is no record that DSR provided pickup of individually posted mail, a service provided in M/St Paul and in other cities.

4 Dogs (and other pets) were permitted, with certain restrictions, to ride on the cars. DSR issued over 200 annual permits

5 Newsboys, newsagents, news butchers — newspaper boys by whatever name — were carried free on the cars. Their movements were strictly regulated, and only those hawking The Duluth Evening Herald, The Duluth News Tribune and The Finnish Daily News were carried free.

Post office clerks were required to receive and deliver mail carried on street cars. In the event that a clerk did not show up, at a designated time & location the motorman was instructed to carry the mail sacks/pouches to branch post offices close by. However, when the time came to carry mail on one-man cars beginning in Sep 1929, operators, by strict company rules, were not allowed to leave a car unattended with passengers/mail.

WORK PAPER – (Lined)
FORM PT–9906 (3–1–64)

6.17 (3) See paragraph numbers Misc haulage + haulage

DSR's franchise specifically limited its operations to the carrying of passengers. Section 5 stated: "... Said tracks of railway shall be used (only) for the purpose of transporting passengers; ..." There were, of course, provisions made for the hauling of construction & maintenance material for itself and the city. In the era before large trucks, DSR provided equipment for hauling materials to & away from street paving and bridge projects undertaken

(13) There were, of course, provisions for the hauling of rails, ties, rail ties, poles, timbers and paving materials for construction & maintenance of its own track and that portion of the st. in which they were laid. And

(7) In the era before large trucks, DSR provided rail equipment for hauling materials to and from street improvement, street paving and bridge projects undertaken by the City and jointly by the City & DSR. On several occasions DSR's electric shovel, work cars & panel track were used exclusively in preparing streets for paving.

(1) (2) Apparently, interpretations of DSR's franchise did not limit what could be carried in its car equipments not designated specifically for carrying passengers. Prior to the general use of dump trucks, and as early as 1903, in agreements with the city, DSR, for many years, hauled thousands of tons of crushed rock for Duluth's Public Works (street) Dept.

(6) In 1911 a spur track was built into a tiple so that crushed rock could be dumped into DSR work cars from a DM&N overhead track at 33rd Ave. W. and Superior St. Plans seem not to have jelled in Dec. 1919, however when the City negotiated with DSR to build a short spur from its tracks on Commonwealth Ave. into the Portland Cement Co's plant to provide direct loading of cement into DSR work cars.

DSR not only utilized its excellent snowplows to keep its tracks cleared of snow, but, as automobile traffic and parking proliferated, the City placed increasing demands on DSR for snow removal and more intensive use of its plows for complete street clearance.

DSR was occasionally frequently called upon to use its crane to move obstructions on or adjacent to its tracks; stalled vehicles, even large rocks that had tumbled down from the Pt. of Rocks!

(8) On several occasions DSR was requested to carry large/heavy loads such as i.e. granite blocks from railroad siding to a cemetery. DSR passed these requests on to the city, inasmuch as the city only could grant such exceptions to the franchise provisions & take the formal action to The requests seem usually not to have been granted.

(10) Although its predecessor PPT had been permitted to haul freight on its trailers, DSR's franchise forbid this practice on PP, and the service was terminated soon after the line was acquired in 1917; DSR billed NW Fuel Co. and Peh Coal Co. for hauling coal 4.42 miles on Dec. 5, 6, 8, 13, 14, 27, 31. This was the last recorded freight haulage by DSR on P.P. (see also 6.36) OVER

(11) This is 6.17 (4) Under original (MLI) management, Woodlund cars carried merchandise/groc[illegible] for residents of that suburb. This practice continued during the period of transition from MLI to DSR operation. On Oct. 1, 1902, however, the practice was terminated, DSR citing considerable abuse of the convenience, and reminding all concerned that provisions of its franchise did not permit continuation of this service.

(12) This is 6.17 (5) DSR seems to have tolerated a liberal attitude regarding how much baggage passengers were allowed to bring aboard it cars. Effective Oct. 1, 1913 passengers were permitted to bring aboard only hand luggage, and none of this was to be placed on the rear platforms where it might interfere with the movement of passengers boarding and leaving the cars.

6.17 (4)

In 1915, for instance, DSR contracted with the city to haul aggregate on its flat cars from the city-owned/operated crusher at the rock quarry near 12th Ave. W. to street resurfacing projects in Lakeside and West Duluth for 48¢ and 38¢ per yard respectively.

(9) To alleviate WWI war-time shortages of labor, wagons and trucks, the Duluth News Tribune editorialized the advisability of having DSR utilize its equipment to deliver coal to several pick-up points in the city. Although DSR was willing to cooperate, Council seemed reluctant to go to this extreme in impermissible the franchise which did not allow such haulage.

(3) DSR and City records do not indicate the source of the crushed rock. However, as early as summer 1907, DSR contracted with the City to haul crushed rock in its work cars to street construction projects from the City's rock quarry and rock crusher on Superior St. west of 12th (5) Ave. W. (see 3.19). In the Spring of 1908, DSR entered into an agreement with the City (Board of Public Works) to haul rock, on its work cars, from this quarry to the lake shore near Morse St. to re-enforce the shore line. To facilitate this project, the tracks of the Morse St. wye were extended, temporarily, at the same time.

(4) In 1915, for instance, DSR work cars were hauling aggregate from this crusher to [illegible] widely-dispersed street resurfacing projects for the City in Lakeside and West Duluth for 48¢ and 38¢ per yard respectively.

July 4, 1919:

record passengers 178,700 riders

1920 record year: 35,000,000

4.18

~~and associated logging~~
~~& shipping~~

Saw mill Mitchell & McClure Co.
on Rices Pt. ~~on the bay front~~ 250 employees on each of 2 shifts
turn of the century
associated logging & shipping
provided great number of jobs

Don't worry
She's just going thru the change

4.20 (1)

One-man Cars

See 5.30 5.44 before writing this section

Operating costs in almost all categories — labor, materials & energy, primarily — rose rapidly during and immediately following WW I. As proliferation of automobiles increased following the war, DSR ridership and revenues decrease proportionately. A major thrust in the search for economies in operating costs (see 5.30) was the use of one-man cars.

In this mood of sought-after economies in operations, DSR ordered 3 double-end and 3 single-end single-truck (4-wheel) Birney cars in June 1919. These cars were to be operated by one man, and, when delivered in September, were given specific assignments on low-traffic lines. The three single-end cars were sent to the Superior Division for service on the Billings Park - Broadway line beginning October 1. However, the Wisconsin Railroad Commission (WRC) would not permit their use — or any one-man cars — in Superior. DSR reluctantly returned the cars to Duluth where, under protest of riders for many years thereafter, they were used intermittently on the Piedmont, Kenwood and E. 9th St. lines (see 4.32).

The Birneys' hard-riding qualities, high noise level, poor insulation and insufficient heating capacity (in winter) were no match for the generous comfort of the big standard cars to which DSR's passengers were accustomed. And their small wheels, light weight and low-profile-truck characteristics contributed to difficulties when operating in snow.

reverse

The three double-end cars were sent to Park Point where they went into service on September 29, 1919 (see 4.33). The Birney cars were not well received by the riders and petitions were circulated to have them removed from service. However, they remained on The Point and were only temporarily replaced by the larger double-truck cars on Summer evenings, on week ends, and during snowfalls.

4.21

Work Equipment

Car 56 with 2 trailers of ties from Woodland ran out at control down 3rd Ave. W., 1st to Superior Sts. 5-1-1900.

As stated elsewhere, DSR was engaged in the haulage of other than passengers, mail, newspapers, etc. For the hauling of crushed rock, sand, gravel, cement, rail, ties and other materials for the construction, repair and maintenance of streets and track, it had an excellent fleet of what were referred to as flat cars — four double-truck and six single-truck. These were variously equipped with concrete mixers, air compressors, welding equipment, and hoists (see 5.). For the preparation of streets for paving and for use in its gravel pits, DSR had an electric shovel (see 5.). For the lifting and hauling of heavier pieces, and for towing of disabled cars, DSR had a crane car, referred to as a wrecker (see 5.). For erection, repair and maintenance of its overhead trolley wire and related equipment, DSR had a double-truck and several single-truck line (tower) cars (see 5.). For hauling sand and sanding rails (see 6.20) DSR had a sand car (see 5.). For plowing snow, snow removal and salting of rails (see 6.19) DSR had four excellent double-truck, and one single-truck snow plows (see 5.), and provision for mounting snow plow blades on its flat cars (see 5.).

4.20

Mention 1st assignments of Birneys on Prob Point, E. 9 St., KENWOOD and PIEDMONT on Oct. 1, 1919

4.23

4.23

Competitive bus operations

Jitneys (western slang for a nickel) were autos for hire at 5¢. pick-up trucks with plank seats, and small buses seating variously 6 to 15 passengers

Jitney operation began in Los Angeles in the Fall of 1914, spreading rapidly nation-wide.

On March 14, 1915 the first two jitneys (Fords) appeared on the streets of Duluth. The snow had disappeared early that Spring, and the streets were in good condition for automobile traffic. The number of jitneys rapidly increased until there were 185 in operation in competition with street cars by midsummer. This had dropped to 80 by August 1 as "jitneurs" found the business unprofitable. Jitney operations ceased during the winter months, but resumed on a much lesser scale in Spring 1916, when 50 were on the streets; fewer still appeared in Spring 1917, and by Fall the "jitney craze" was practically over in Duluth. Only "a couple" appeared on the streets in Spring 1918. However, sporadically from time to time for several years thereafter, particularly during periods of fare litigation, jitneys appeared on the streets.

The Duluth jitneys operated primarily on Superior St. between 26th Ave. West and 15th Ave. East, in 1922, taking the "short haul" by proceeding just ahead of scheduled street cars and picking up the "short haul" or "cream" of passenger traffic. ~~These were converted light trucks with plank seats.~~

During their first year of operation (1915), there were no restrictions on jitneys; they ran whenever and wherever they wished. Although the city seemed reluctant to control them, an ordinance eventually required the furnishing of a bond. Together with the declining novelty and the hard facts of economics, the jitney had had its days in their first year of operation. DSR estimated its revenue loss to jitneys at about 2090 during the summer months, or approximately $50,000 in 1915, $40,000 in 1916, and $10,000 in 1917.

see page for duplication

The Minnesota state supreme court, in a decision handed down 5-28-16, ruled valid a (Duluth) ordinance requiring jitneurs ~~operators~~ to obtain a city license and furnish bond. Their numbers dwindled thereafter.

~~jitneys appeared only briefly in Superior~~

Jitneys did not appear on the streets of Superior until April 24, 1921, when hourly service was provided. This was increased to 20-minute service on August 21. In the remaining months of that year, they were estimated to have carried local passengers, over 27,000 that were carried "vicious" that year. Their operations expanded considerably the following year when they carried 308,000 passengers. This increased to 368,000 in 1923, and to 186,000 the first five months of 1924. Although the WRC did not approve of jitneys, control of their operations was a municipal responsibility. On September 12, 1923 DSR petitioned the WRC for assistance in getting the city to regulate jitney operations. Although DSR was able to get council action, and although the City failed to enforce the new regulations, the chief jitney operator, Std. Bus Co., ceased operations to E.E.s (Itasca in Oct 1924. Shultz's "Brown Buses" immediately picked up the service and operated until bought out by DSR on July 12, 1925. At the height of their operations in Superior in 1924, it is estimated that the jitneys carried 205,431 or 8.8% of Superior passengers. DSR purchased the Superior jitney operation on July '25, thus eliminating all D-S competition. It is difficult to realize that the private automobile was not always mass transit's major competition, and did not become a factor to be reckoned with until after WWI. In 1909, for instance, there were only 40 automobiles in Duluth, 20 in Superior.

go to X on pp2

competing interstate buses began 6-12-24 and Oliver 8 buses 4-12-24 to Circus Grounds

Jitneys reappeared on Duluth streets again during the Depression. The difficult situation was resolved when voters rejected repeal of the Jitney Bus Ordinance in an April 7, 1931 city referendum.

4.24a Bus operations, Duluth
" " , Superior
" " , Interstate
Bus Operations

b1 As the jitneys disappeared from the streets of Duluth (see also 4.23), new competition appeared; small, unregulated, rival buses began to appear on Superior St. in Spring 1924. The City put the matter to the voters in a June 16 election result: 12,230 votes in favor, 9,483 votes against, of a bus regulatory ordinance. A temporary restraining order by Judge Bert Fesler on June 23 allowed the buses to resume operations. However, the June 16 election was held valid in a court hearing by Judge J. Grannis, and bus operations were halted on July 16.

To fascilitate litigation on this and related matters, DSR established a subsidiary corporate unit, Duluth Coach Co. in June 1924.

The courts halted a brief — August 3-23 — Duluth 9th Ave. E. to Oliver competitive bus operation.

A rival Interstate operation by Superior White Co. began operating over the Duluth-Superior (Interstate) Bridge on December 22, 1924.

DSR changed the name of its bus subsidiary in March 1925 to Duluth-Superior Coach Co., and acquired the Superior White Co. and its Interstate operation on April 12, 1925.

insert * here

DSR's first venture into suburban bus operations was the MORLEY HEIGHTS line which connected with the WOODLAND line at Lewis St. Operations began Dec. 18, 1924 using a "Reo" bus.

DSR's second venture into suburban bus operations was the CALVARY line, which began operations June 18, 1925 from the WOODLAND loop at Austin St., along Calvary Road to Calvary Cemetery. The route was extended to Arnold on May 20, 1926. This was DSR's first venture outside city limits. Rights were transferred to Walter Sahlen, a prior private operator, on July 7, 1930, who assumed operations the following day (see also 4.30).

* All bus operations thereafter — except trolley buses — were managed by DSR's wholly held subsidiary Duluth-Superior Coach Co. (DSC).

(See also 4.23 for jitney operations in Duluth and Superior in this era).

On July 13, 1925, DSC began operation of a bus line to Itasca from the end of the ALLOUEZ line at 38th Ave. in Superior (see also 4.44).

(3) As a substitute for continuing the service to Fond du Lac abandoned by the Northern Pacific Ry. (see also 3.23e, 4.40e), DSC started operation of a bus line on January 1, 1926 from the end of NEW DULUTH line at McCuen St. to Fond du Lac.

(4) On April 13, 1927 DSC applied to MR&WC for certification to operate an Interstate line, via the Arrowhead Bridge. On June 28, 1927, J.B. Finch, a Superior independent bus operator, made a similar application.

DSC's application was approved, and service began July 20, 20 minute headway; no transfers.
J.B. Finch's reapplication of December 6, 1928 was denied.

In two years, DSC had established 28.77 miles of bus routes.

b2 On April 23, 1928, DSC applied to MR&WC for certification to operate a Duluth BOULEVARD route. Service began on June 15 from a connection with the E. 8TH STREET and KENWOOD lines at 6th Ave. E. & 7th St., west on 7th St. and the Boulevard to the intersection of Hutchinson & Hermantown Road, and providing service to the Enger Park area. Service was cut back to 3rd Ave. W. on November 22. The remaining portion of the line was discontinued November 1, 1929.

4. Annoying bus competition came again to DSR at a most wrenching time — when depression-induced revenue declines were experienced by many of the nation's businesses. On February 17, 1929, J. B. Finch, a timber operator, challenged the City's 1924 Jitney Ordinance following a State Court denial of his application to operate buses between Superior and Duluth. Taking advantage of technical changes in City ordinances, Finch, on December 3, organized his Gopher-Badger Bus Co. Utilizing two 14-passenger buses, half-hour service began December 27 between the two cities via the Arrowhead (West Duluth) bridge: fare 25¢. Amid seemingly endless litigation, Finch purchased additional, larger buses and began interstate service via the Duluth-Superior (Interstate) Bridge on February 7, 1930: fare 20¢. DSR met the competition by ~~establishing a subsidiary, Duluth-Superior Coach Co. and~~ inaugurating its own interstate bus service over both routes, allowing free transfers between street cars and buses, effective March 29. The fierce rivalry intensified when the Superior Council, on June 25, denied Gopher-Badger's petition to pick up local passengers. The several following months witnessed a plethora of charges and counter-charges, indecisive State and City action, even police intervention. All this halted suddenly when DSR, on December 23, 1931, announced that it had purchased the Gopher-Badger Bus Co.

6 4 Relations between DSR and Superior's City government became strained during the severe retrenchment program that followed DSR's aquisition of the Superior properties in 1906. As Superior's economy and population declined, so also did the service provided by DSR in those difficult days of bare bones deficit operations, resulting in further strained relations with the City. And fare litigation dragged on for years.

Rail service was discontinued on June 25, 1931 on the SOUTH SUPERIOR line. (see also 3.11, 4.49). Bus service over the same route began the next day. On the same day, rail service ended on the BROADWAY line (see also 3.14, 4.47), and on the 6th STREET line (see also 3.15, 4.50). Bus service over a modified route, 17th St. to 3rd & Grand began the next day.

Some management changes and a change of name, effective January 1, 1932, established the Duluth-Superior Bus Co.

The repaving of Piedmont Ave. brought about the end of rail operation of the PIEDMONT AVENUE line on May 10, 1934 (see also 2.16, 4.37). A modified bus service was operated until trolley buses began operation on August 5 (see below).

b6 Rail service was discontinued on the ALLOUEZ line ~~suddenly when a severe freezing rain storm pulled down trolley wires and poles~~ on March 5, 1935 (see also 3.13, 4.44). Bus service over the same route began the next day.

b7 Rail service on the BILLINGS PARK, 21st STREET, 3rd SREET/INTERSTATE lines ceased on June 5, 1935. Bus service over the same lines began the next day

b8 Rail service on the EAST END line was abandoned on June 23, 1935. Bus service over the same route began the next day.

By this time, DSB was operating 39 buses, serving all former rail lines in Superior, two interstate lines, and four lines in Duluth. With the abandonment of all remaining rail lines in Duluth in 1939, this increased to 127 buses and 29 trolley buses.

~~Rail service on the KENWOOD line ended August 31, 1936~~ (see also 2.18, 4.32). ~~Bus service from 7th Ave. E. & 9th St. to St. Marie St. began the next day.~~

Sunday morning bus service was provided on W. 4th St. for worshippers attending Catholic Cathedral on 4th Ave. W. beginning December 13, 1936. The bus connected with E. 4th STREET, E. 8th STREET, KENWOOD and WOODLAND street cars at 5th Ave. E. (see also 4.28).

On January 4, 1937 a (trial) bus service was begun, routed ~~from~~ 23rd Ave E. & 4th St. to 26th Ave. E. & London Road. Abandoned on November 4, 1939 when the WOODLAND (trolley buses) line returned to Superior St.

~~Repaving of Commonwealth Ave. forced removal~~ of rail service south ~~of the Cement plant wye on and after May 5, 1937~~. (see also 2.20, 4.40). ~~Replacement bus service operated to NEW DULUTH thereafter.~~

The W. 8th STREET bus line began operating June 1, 1937; 39th/40th Ave. W. & Grand, West 8th St. to 57th Ave. W.

With termination of Greyhound service to Proctor, the BAY VIEW HEIGHTS line began operating July 12, 1937; 56th Ave. W. & Grand, to 57th Ave. W. to Highland St. and Vinland St. to Proctor.

The HERMANTOWN bus route was extended to Haines Road November 1, 1937.

~~PARK POINT buses operated through to 49th St.~~ June 21, 1938, summers only.

~~Declining revenues brought about part-time~~ substitute bus service on the WEST DULUTH/Oneota street line on November 20, 1938. ~~Street repaving projects in~~ West Duluth brought complete abandonment of rail operations on March 13, 1939 (see also 2.14, 4.38). Bus service over the same route began the next day.

(8)

Trolley Buses

~~The rapid decline in revenue passengers fell WWI along with the~~

The cost of building new streetcar lines exceeded the return on investment from operating profits ~~in the~~ in the era after WWI. This, along with a rapid decline in revenue passengers, forced street car companies to look for a cheaper way to serve ~~suburbanites~~ suburbanites without building or rebuilding tracks. One logical solution was the trolley coach / trolley bus / trackless trolley. In most situations, this required only the addition of overhead trolley wire, using the already available 600 Volts for efficient operation.

carried on DSRi

now three modes of traffic:

Three events in 1934-35 brought about major changes in the percentage of passengers

Complete conversion from st cars to bus on all Superior lines on the Interstate line, and on Park Point # ~~Introduction of the~~ Expansion trolley bus operations (LESTER PARK-PIEDMONT line) # Implimentation of 6 suburban

feeder

bus lines:	1934	1935	1937*	1939	1940
Street car	70.3	55.5	52.3	24.9	—
T Bus	20.5	19.9	18.3	25.6	37.1
Gas Bus	9.2	24.6	29.4	49.5	62.9

* last year of rail operation

4.24 (b)

WORK PAPER – (Lined)
FORM PT-9906 (3-1-64)

X

Final rail/trolley bus operations

Within the scope of ~~its~~ modest dimensions, DSR possessed a great and fascinating variety. Its well-kept, yellow trolley cars ran thru elegant residential neighborhoods and thru busy industrial areas; along country roads and thru congested urban streets; out along the sand dunes and thru rock cuts; they climbed the steep bluffs and skirted the waters of the lake, bay and river; thru center reservation; to the steel mill and over the bridges that crossed busy waterways; and there were connections with ferry boats and inclines.

The cars encompassed a fascinating array of early single-truck "dinkies," classic St. Louis Car double trucks, Birneys, inclines, relatively modern "light-weight noiseless" and a large stable of reliable, heavy, "standard" city cars. And, in earlier days, there were open cars, both motorized and trailers.

Statistical data -- Sections 2, 3, 4, 5, primarily -- are sterile and cold and, for the most part, do not reflect human element. In contrast, ~~Fortunately,~~ this ~~human element~~ becomes an important ingredient in this section.

We can only theorize, of course, and limit ourselves to conjecture: if the street repaving projects, which brought an end to rail transit in Duluth in July 39, had not occured before been postponed until Pearl Harbor Day, DSR's rail operation would probably have continued for nearly ten more years. The war years placed great burdens on DSR's meager bus fleet; the st cars would have been a welcome facility to carry the heavy traffic created by a war-stimulated economy and ~~shortages~~ tire, new car and bus shortages.

(2)

4.24

3, 8, 4.48 1939 86 1956 1935 47 86 31

Bus ser over the same route begin

A truncated

b operation of the EAST END line continued for several more days from 31st Ave. E. and 4TH St. The ALLOUEZ rail line extension had been a forced abandonment in the previous March when a severe ice storm pulled down the trolley wires, with cars able to go as far north on Tower Ave. as the wye at Broadway. When paving operations reached Broadway, it was then necessary to retreat to the wye at Belknap and Tower. During these days of operation isolated from the normal facilities at 4TH and Ogden, DSR used a temporary arrangement for storing and servicing the five remaining cars at Hill and Belknap. ~~When paving operations reached Belknap~~ The end of rail operations in Superior came when the paving operations reached Belknap. Angus Hurlbut, operating car #301, pulled into the temporary service wye at 1:10 a.m. June 24, 1935. The ~~five~~ remaining cars were then taken to ~~Duluth~~ the Duluth car barn via the Soo line for a few more years of spasmodic service (see also 4.53).

b ~~Street reparing was the major cause for final rail abandonments~~ in Duluth, also. ~~The reparing of Superior St. from 14th to 29th Avenues West, which isolated the shops and other DSR facilities from the remainder of the system.~~ Car #248, with Bert Lodgeard as operator, had left Austin St. at 1:15 a.m. Vernon Anderson, head of DSR's schedule dept. and Jim Kreuzberger were the last remaining passengers as the car pulled into the 29th Ave. W. yard at 2:05 a.m. July 9, 1939. Souvenir hunters followed the car into the yard. Lodgeard ran from the car with his money changer, followed by Anderson and Kreuzberger with the fare box, transfers and control handles.

was the last that ended its rail service in Duluth

As this is written in 1986, it has been 47 years since the last street car ran in Duluth, and 51 years since Superior's last street car ran. Some lines, like Lester Park, Park Point, South Superior and Broadway have been abandoned for 55 years; their tracks have long since been covered with asphalt or removed completely. Hardly a piece of evidence remains of the Duluth incline. The Lake Ave. viaduct is gone. And even "old-timers would have difficulty retracing the rails into Morgan Park or the wye at 12TH Ave. W. In some sections of the city, the entire envirement in which the street cars operated has been obliterated: Oneota St., the middle portion of the Kenwood Ave. line, the Riverside portion of the MP line and the Duluth-Superior Bridge, Lamborn Ave. Bridge and Main St. portions of the Interstate line. Indeed it is quite difficult, for instance, to relate street cars and an incline railway to the central hillside and Duluth Heights.

(4) 4.24 a-d

b Seemingly, the cities' street car system has vanished completely and irrevocably. But, not quite. The tracks themselves — some of them — lurk under the street surface! And, if you look carefully, you will find tell-tale evidences: the passing track at 26TH/28TH Sts. on Minnesota Ave.,

a Replacement service for the abandoned Incline to HIGHLANDALE, operations in July 1939, posed serious problems for DSR. A routing that would serve both the former Incline and Duluth Heights communities would be difficult if not impossible, and involve "... a most difficult, expensive and dangerous route (especially in winter). The solution, eventually, was the establishing of two seperate routes, neither of which followed the original routes.

— involving a 16% grade!

b It is interesting to note that the (State) Commission's "fair value" placed on the INCLINE in 1932 was $352,130. The actual scrap value when demolished in 1939 was $11,787.

a Conversion of the W. Duol (Oneota) line from rail to bus operation began when Nov. 20, 1938 when Park Point buses began the operation to 62ND Ave. W. After 7:30 p.m. weekdays & on Sundays/holidays

b ~~DSR received RR&WH Comm permission~~ on 4-12 to abandon rail operations

Last trolley bus 5-15-57

4.24

~~5.88~~ ~~5.60~~

Bus

Operation of the Calvary

Road - Arnold bus line

passed from D-S Coach

to Walter Sahlin

eff July 7 1930

Crosley.
MAJOR APPLIANCES

True Value
HARDWARE STORES

4.26

to [redacted] minimize congestion & hazards in operation at 3rd Ave W. & Superior St, schedules were adjusted so that cars [redacted] east on even minute; pass west on odd minute.

WESTERMAN'S TRUE VALUE
295-5131

4.25

East End

Construction of the Armory loop at 13TH/14TH Aves. E. provided dual advantages: ~~It provided~~ a convenient, much needed facility for extra car service for events at the Armory, Amphitheater and Curling Club without interuptions to regular service on Sup. St. ~~[illegible]~~ And a convenient terminal for short turn East End cars, primarily Duluth-bound ~~cars on the~~ Interstate cars.

The East End line had the dubious distinction of having one of the few stretches of slow order track, ~~made necessary by~~ the result of poor rail and bad pavement between 3rd & 15TH Aves. E. — a situation that prompted the substitution of trolley bus operation to East End and Lakeside 8-5-34 when the street was repaved.

A car house was built on the SE corner of 20TH Ave. E. and Superior St. simultaneously with ~~construction of the~~ electrification in 1890, and the first test car operations were made from it. Lakeside cars were operated from and maintained at this location until the large ships were built at 26 in 05. However, for reasons not known, the facility ceased as an operating facility at an early date, became a storage facility for a short while, and soon was disposed of. (see 7.9)

At various times community groups urged DSR to use the 24TH Ave. E. - 2nd/4TH St - Superior St tracks in various route and loop arrangements. Each plan to gain additional service would, of course, result in a corresponding loss of service in the alternate situation.

Rail service on Superior St. from 3rd to 24TH Avenues East and including the Armory Loop was abandoned 7-29-34 when Superior St. was repaved from 3rd to 18TH Ave. E. ~~and replaced by trolley buses over the same route beginning 8-5-34~~ Trolley bus service began 8-5 from Lester Park to Piedmont via Superior/Michigan Sts., an extension of the initial trolley bus operation that had begun operating from 44TH to 61st Avenues East on 10-4-31.

Woodland cars rerouted

Show last day rail operational on this and all following lines

4.26

2nd - 3rd Aves E.

The 3rd Ave. E. & Sup. St. wye served the vital role of turning ~~east~~bound cars on the Interstate line and those coming into the downtown from the west. Its importance declined ~~[illegible]~~ when the Armory loop (13th - 14th Aves E.) was built in June 1927. The wye ~~was~~ were abandoned Sept 4, 1936 when construction began on the 2nd Ave. E. tracks. and the one block of tracks between 2nd & 3rd Aves. E. Sup~~[illegible]~~ St. Business men ~~between~~ on Superior St. between Lake Ave. & 3rd Ave. East complained about this essential loss of traffic that followed the abandonment: E. 4th, E. 8th, Kenwood, Hunters Park/Woodland and Crosley cars now operated via ~~2nd St.~~ 3rd Ave. W. The double track on 2nd Ave. E. became operational in Nov., providing ~~several~~ a clockwise loop for turning cars, a procedure that had been lost when the 3rd Ave. E. wye and Armory loop were abandoned. And the 2nd Ave. E. tracks ~~again~~ allowed the "Hill" cars to again use Superior St. (The Kenwood cars continued to use 3rd Ave. W.) This then became DSR's steepest grade: 10.45 percent between Superior and 1st Sts.

4.26

From Nov. 36 until end of rail operations, east-bound cars from W. Duluth & West End looping at 2nd Ave. E. carried "2" ~~destination~~ route sign and appropriate W Duluth/Grand Ave. ~~[illegible]~~ destination signs

Aerial Bridge cars showed "15"

4-26

The wyeing of many streets at 3rd Ave. E. was both troublesome & hazardous. In Jan 1928, DSR&

City officials studied alternatives. as far east as Washington (7th Ave. E.). However, the costs of offset properties for use as wyes or loops were both exorbitant and legally difficult to acquire. So, ~~nothing~~ ~~more~~ there were no further developments

4.26

~~Runs~~ -

East-bound runs ~~using~~
~~3rd Ave. E~~ turning at the
Use of the 3rd Ave. E. & Sup St wye
was discontinued on Sep 15, '36.
Runs using that terminal
will hereafter turn at the Canal.

Terminal sign will be 15

East-bound cars turning
on 2nd Ave. E. loop will
be signed 2

4.27

The line was completely converted to one-man car operation on June 1 when ten cars were converted. This was the first line in Duluth to be converted in this manner

Lake Ave. Aerial Bridge

(3) As the economic fortunes of Lake Ave. So declined, so also did DSR's passenger traffic on this line. Because of its low traffic, it was chosen to receive the first ~~one~~ four converted one-man cars in Duluth April 1, 1928. With the rebuilding of the Aerial Bridge and thru-routing of Park Point cars over the bridge and north on Lake Ave to Superior St., beginning 3-12-30 service on the Aerial Bridge line was reduced to rush hours only.

(2) As automobile traffic to The Point increased, so also did the congestion at the bridge approach, ~~A loop was built in Aug. 1928~~ making it difficult to back cars into the wye on Morse St. The hazard was eliminated in Aug. 1928 when a loop was built ~~using Morse St., So. 1st Ave. E (St. Croix Ave.) and a portion of private right of way adjacent to the Engineers Building (see 2.14)~~

(5) The Lake Ave. So. portion of the line had the distinction of having DSR's only known train operation (see 6.9).

(MP) ~~Although seldom used in revenue service in its later years, the rail line was not abandoned in March 1938, until and served thereafter by Park Point buses.~~

(1) The Lake Avenue line, though only miles long, carried a great volume of traffic, and had the distinction of offering the most frequent service of any DSR line for many years.

~~The tracks were further downgraded when~~

(4) The Lake Ave. tracks were further downgraded when the Park Point street cars were replaced by buses on June 15, 1931. The double-track portion of the line between Michigan and Superior Sts. was reduced to single track on July 10. Seldom used, the rail line was finally abandoned in March 1938. Used rush hours 3-8-33

A shuttle operation on Lake Ave. between Railroad St. and the Canal was necessary during viaduct repairs in Dec. 1905 and again in Feb. 1906.

E. 4TH St.

Service on the E. 4th St. line was extended as it followed construction crews ~~As construction of the laying~~ track, progressing eastward in the late Fall and winter ~~of~~ 1890. This is the only known instance of this sort, all other lines awaited service until construction was completed.

Construction of the 27TH Ave. E. loop eliminated the hazards associated with the wyeing of cars ~~theretofore~~ at 24TH Ave. E. theretofore.

Rail service ended 7-8-9-39, and was replaced by gas buses operating over the same route.

4.29

WORK PAPER - (Lined)
FORM PT-9906 (3-1-64)

4.29

Operations

W. 4th St. The W. 4th St line was, mostly surely, DSR's all-time "squeaky-wheel", the ill-conceived result of pressures placed on DSR to build a line on the central hillside. (see 2.14) Operation began 11-4-92. The st de W. 4th St cars originally terminated their runs downtown on a crossover near 5th Ave. W. & Sup. St, using one car on a 30-min. headway. This line was thru-routed with the Grand Ave line (to 57th Ave. W). in 1903, with a 20-min headway. × Piedmont Ave, when that line was opened 6-1-10. It was thru-routed with ~~the W. 4th St line~~. ~~Two years later, on 5-1-12, std dt cars were assigned to its base schedules, the last line in Duluth to receive them.~~ With the sharp drop in passengers ffl WWI ~~Effective 5-16-19~~, the line was down-graded in May 1919: converted to a shuttle operation, using a double-end s.t car. A few evening pull outs, some using dt cars, continued to W. 4th St until the middle 20s. (see 5.60 note 14), 15-min headway

During 1925, for instance, only 303 passengers per day were carried on this line — ~~less than~~ or only 3 per ~~round~~ half trip! It ~~was quite~~ is obvious that a resident of 3rd Ave. W. & 4th St., for instance, would not wish to ride 16 blocks — including a transfer point — when ~~he/she~~ that person could walk two blocks down the hill to 2nd St., or four blocks to Superior St., where frequent service to all parts of the city was available.× Public hearings on 7-10 ~~7-30~~ produced little opposition, and the line was abandoned 7-24.., the first rail line to be abandoned in Duluth. ~~×× a later day — Gen Mgr H. Warren repeated what DSR had known full well since Council ordered the line in 1889."~~

~~In the 1920s~~ several Sunday morning trips were through-routed from the Woodland to W. 4th to accomodate worshippers going to ~~the Catholic Cathedral at 4th Ave. W. and 4th St.~~

× The Depression reinforced DSR's desire to abandon this line. An inter-office memo dated June 3, 1930 stated that, "The estimated annual savings due to this abandonment is $7,521.

From its beginnings in 1892, extra cars were operated on Sunday to provide additional service to Sacred Heart Cathedral at 2nd Ave. W. & 4th St. and to

× ~~And~~ This ended, ~~also~~, the operation of the last remaining old 52 and 57 — single-truck cars — and the last hand-brake cars. The Cincinnati, Newport & Covington Rwy operated the last hand brake cars in the US: 1947.

4.29

Operating thru cars from E 4th ST to W 4th ST on Sunday were referred to as 'church cars'.

4.29

Single-truck, 1-man cars began on W. 4th St. line eff May 16, 1919

15-minute service

WORK PAPER 3 (Lined)
FORM PT-9906 (3-1-64)

4.30 Woodland

~~As the name implied, the original plans were for a motor line to Woodland~~ just what the specific original plans for the Woodland line were, as implied by its title, is not known. ~~No doubt the route was well defined, for~~ Nevertheless, when DSR's plans for the E. 4th St. line were resolved in , MLI seems to have made some quick changes in its plans; ~~and this became then & thereafter a joint~~ DSR & MLI then and thereafter worked jointly. MLI seems to have had the route well defined even before this quick change of plans. ~~Construction of the line was coordinated with~~ the original route of the Woodland line

x Although a look at the map showing would confirm that the shortest distance between two points is a reasonably straight line, that theory does not always apply — particularly in an extremely hilly city like Duluth. Choice of the original (Woodland Ave) route from 4th to St. Marie Sts, though quite direct, was a long, 6% grade — not an unusually difficult situation. But

Altho the contract for joint operation of the line spelled out in detail such matters as fare collection and rates, responsibility for track maintenance, (see Appendix AAA) there seems to be no reference to the type of equipment to be used on the line. Two motorized cars (see 4.7) had been ordered specifically for this line. At the same time 4 open trailers (also see 4.7) were ordered for use on this line. Perhaps the sylvan beauty of the line had been an influence in managements decision to use open trailers. ~~The decision the use of trailers determined use of trailers, on this line, however, turned out to be more was not without its pro~~ In addition to the normal ~~use of~~ problems associated with the use of trailers (see 6.9), the Woodland line immediately ~~quickly~~ developed its own problems x, the burden of pulling trailers up the Woodland Ave grade above 4th St seems to have been too much for the small motor cars that consistently, it seems, over-heated and stalled. Perhaps MLI could not afford the luxury of better equipment. No matter; it simply didn't work very well. Perhaps a better alternative was to

find an easier grade. Since they set about doing quickly, and operation over the easier Wallace Ave grade began in Dec 1891. (see 2.7).

Like the other similar joint operations by real estate developers at this time (see 3.20), MLI increasingly neglected the maintenance of the line, the tracks in particular. Deterioration of the tracks became so serious, in fact, that DSR determined twice (10-1-1900 and 6-30-1901) that it was no longer suitable for safe operation of the cars and service was halted until the difficult situation was resolved.

At a very early time, DSR maintained a "shed" at the end of the Woodland line. (A 0-0-00 time table shows a car leaving 3rd Ave. W. daily at 5:30 AM, arriving at Austin St at 12:30, and leaving Austin St. inbound at 1 PM). The 2-man crew slept overnite on the cars (summer) or in rented rooms (winter). The car house was not restored following a fire on 11-14-94, during which car # 34 was also destroyed.

Woodland cars operated originally via 3rd Ave. W., 2nd St., and 4th St. Tracks were laid in 24th Ave. E. on Aug. 18, 1907 and the cars have since operated via Superior St. and 24th Ave. E. When the E. Superior St. tracks were abandoned July 27, 1934, Woodland cars reverted to their original routing. This was slightly altered again on Nov. 12, 1936 when Woodland cars began using the newly-built 2nd Ave. E. tracks instead of those on 3rd Ave. W. between Superior and 2nd. Streets.

Intermittently, at an early time, Woodland cars used a somewhat temporary track on 12th Ave. E. between Superior and 4th Streets. See 2.22c for details.

Rail service ended 7-8/9-39. Trolley buses began operating 11-4 over the original Superior St/24th Ave. E. route

DT cars began to Hunters Park 3-16-05

" " " " Woodland 7-19-05 (council order 4-26-04)

More so, perhaps, than elsewhere on the DSR system, the loop at Austin St. provided a small town/rural atmosphere. The little combination grocery/confection/waiting room inside the loop was a convenience for both inbound and outbound passengers and those transferring to and from the Calvary Road bus. DSR management, however, was continually concerned about the storekeepers untidy appearance of the area around the store. And in the words of the Superintendent, "... the areas next to the building are used Saturdays and Sundays by bootleggers to sell their wares..."

Because of inadequate power and light passenger traffic, DSR operated its new double-truck cars only as far as Hunters Park when that service improvement began March 16, 1905; Woodland passengers transferring to and from the smaller single-truck cars in a shuttle operation. Although DSR and Woodland Co. managements had approved this subsequent arrangement on Jan. 20, there was considerable dissatisfaction with the plan. DSR began the through operation of double-truck cars to Woodland on July 19, satisfying a Council order of May 3.

Prior to 1921, a mere shelter was provided at Austin St. In April of that year, DSR was able to arrange for the construction and operation of a small grocery store/waiting room.

When the double track was extended to Austin St. in August 1928, street cars began operating counter-clockwise around the loop instead of the previous, convenient clockwise operation when the line was single track.

7-29-34 rerouted

4.30

Marley Heights bus route:
Oxford St., Livingston Ave.,
Summit St., Spear Ave.,
Livingston Ave., Oxford St.

4.31

Birney cars began operating on E. 9th St. line on Oct. 1, 1919

See also 5.32

4.31
4.32

E. 9TH – E. 8TH
~~Kenwood~~

Extending the E. 9TH St. line along 8TH St in 1923 stimulated residential development considerably so much so that the paving of E. 8TH St. became imperative. During the 2-month st. paving project the following year, service was cut back to the 13TH Ave. E. loop for two months beginning Aug. 15, 1929, the only known instance when service was curtailed in this manner.

The rail line was abandoned on 7-8-39, and replaced by gas buses on a slightly altered route.

Kenwood

Next to the W. 4TH St. ~~line~~, the Kenwood line and the Park Point lines had the least revenue-per-mile operation in Duluth. Several devices, including the most-prolonged use of Birney cars, were used to hold down operating costs.

~~The rail was~~ Rail operation ceased Aug. 31, '36 but a portion was restored temporarily in a unique manner (see 2.18). Rail operation was finally terminated 6 months later, 2-21-37, with gas buses operating over a slightly altered route

In a DSR June 3, 1930 review of financially troublesome rail lines, the Kenwood Ave. line was singled out, and proposed for entire abandonment north of The Boulevard. An annual loss of $11,721 was offset by savings in annual cost of operations and taxes of $9,588.

Put some of this in 4.32

lots 7 to 9 Block 8 East Lake Division 4.31 4.32

E 9th 9-1-23 operational
Kenwood 9-1-24

8-9-22 Council, by resolution, ordered E 9th / Kenwood extensions
2-19-23 " " requested DSR to inform Council of DSR's "attitude" regarding extensions, DSR's attitude was favorable to building the two extensions.
3-15-23 DSR's reply stated that because of adverse economic conditions, paving litigation, & the costs of additions & improvements to the cos 26-27th Ave. W. facilities, no specific date could be given.
4-17-23 DSR gave Council a letter of intent to build E. 9 immediately Also offered to operate a bus as an extension of Kenwood
5-14-23 In a conference with Mayor Snively, DSR agreed to ① build Kenwood ext on or before 8-1-24 ② be relieved of Kenwood ext. bus extension & ③ be relieved of any requests for extensions in 1924 (except E. 9 & Kenwood)
5-14-23 After examining other possibilites, DSR decided on purchase of 2 lots at Kent Road
5-25-23 Mayor & DSR agreed that no additional publicity be given E 9th extension be built, and that no additional publicity be given to Kenwood, Piedmont, & E. 4th extensions.
5-28-23 Council ordered the E-9th Xtension to be built immediately
" " the Kenwood " " by 8-1-24
6-5-23 DSR submitted blue print of trolley pole locations to City for approval. detailed
6-5-23 DSR accepted Council terms of 5-28
6-19-23 DSR submitted blueprints of 13th Ave, & Kent Road loops, 19th Ave. switch, 9th Ave. E. & 9th St. wye, and entire line for City approval
6-20 Double track laid on 9th St.
6-22 Council approved plans
6-23 DSR recid deed for 2 lots for loop at Kent Rd.

July 1929 11th Ave. E. extended & "surfaced" north of 11th St. DSR sold some of its gravel pit lots.

22 Jan. 1930 ~~to July 1929~~ settled in District Court suit by Nelson re Kent Rd loop

4.33

Crosley

The Crosley line was the last major construction in Duluth/Superior.

Car 163 went into shuttle operation 10-7-34, replacing ~~unsuccessful~~ Double-end Birneys which had been used unsuccessfully since August 5 ~~July 29~~, when the East End portion of the Crosley/Lester Park lines was abandoned.

4.32

Birney cars began operating on ~~the~~ the KENWOOD line on Oct 1, 1919. See also 8.32

~~making alternate trips to~~ 8th ~~Ave. W.~~ and PIEDMONT AVE

4.34

WORK PAPER - (Lined)
FORM PT-9906 (3-1-64)

*The L Land Co "Original proprietors of Lakes & L Park. We will furnish money to build houses on lots bought of us, to be returned in easy payments." a real estate developer

Lester Park

Lakeside (Lester Park) *The LR Co, an affiliate of the L Land Co, ~~a real estate developer~~, began operation of the Lakeside line on 12-17-92 using cars provided, maintained and operated by DSR (~~see~~). Altho DSR seems to have made an unexplained provision on its roster for 5 cars, numbered 63 to 67, there is no record that these cars were ever obtained or assigned for this specified operation. Instead, it appears that st DSR cars 39, 40, 44, 45, 46 were leased/assigned to this line (see 4.5).

~~Like other real estate related operations~~, LR also allowed its tracks to deteriorate ~~5 years after the line was built. The tracks~~ into such poor condition after only 5 years of operation that ~~DSR~~ it sought release from its franchise. The whole matter was resolved when the property was acquired by DSR Oct. 15, 1900 -

Like other real estate-related operations in Duluth, LR allowed its service to deteriorate soon after service was established, especially LR seemed not able or willing to provide adequate service for the large crowds going to the beach, picnic areas, amusement areas in and adjacent to Lester Park.

On 4-27-~~[illegible]~~ Council passed a resolution ordering LR to comply immediately with the terms of its charter/franchise regarding frequency and extent of service on the Lakeside line or forfeit its franchise in 60 days. This seems to have resolved little or nothing.

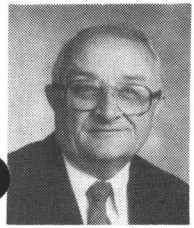
~~and~~ Aug. 3, 1896 and again on 6-6-99

6.21 ~~Woodland 1-31-96 DSR furnished snow plow & salt car for ML1 and charged for service~~

That portion of the Lester Park rail line between 45TH and 61st Aves. E. was abandoned on 8-26-31 and replaced by trolley buses over the same route beginning 10-4. The west end of the trolley bus route was a triangular loop formed by Regent St, 44TH Ave. E. and Superior St., with a 2-stall drive-thru garage inside the triangle for housing and maintaining the buses.

Lester Park in the early years of the century was ~~one of~~ Duluth's ~~most popular~~ "finest pleasure resort and most popular picnic grounds" where pavillions were operated by L. A. Gunderson associates

DSR built a temporary wye at the west end of the Lester River bridge (Occidental Blvd) when the city replaced/rebuilt the bridge in summer 1904.



Think Bill and Joan Stultz

4.35

Highland Line

DSR contracted with Highland Co to operate the line for 3 yrs ~~June 30, 96~~ from Jan 1, 1994. Contract terminated June 30, 1896

RE/MAX First, REALTORS
11095 Metcalf, Overland Park, KS 66210
913/338-8402 (Bill) • 913/338-8403 (Joan)

4.35 3

9 yrs

1939
1891
48

~~In their final full year of operations (1938), the Incline's Highland Aveline~~

Financial reports indicate that the Incline / HIGHLAND AVE LINE were deficit operations every year of their existence. ~~And during those 48 yrs~~ And it would be quite safe to assume that DSR would like to have abandoned these operations at any time during those 48 years. A financial report shows these distressing figures for the final full year of operations (1938):

Annual cost of service	$45,211
" revenue	16,656
" loss	28,555

Abandonment of these rail operations did not, unfortunately, mean the end of service headaches for DSR. Replacement/substitute bus service was difficult to establish; please see 6.24

Double-truck car 255 went into service on Highland 1-18-13
" " 256 " " " 1-22-13

? wording ? The Incline was one of Duluth's chief attractions. And during the 9 yrs (1892-1901) ~~that of the~~ that The Pavilion was in operation, ~~at the~~ the Incline & Pav. were probably the city's chief attractions.

3½ minutes running time of original cars; no stops

City ordered an intermediate station at 4th St. on 2-15-92.
Built! physical nature of original cars made this impossible?!

With one Highland car out of service for repairs/maintenance, it was possible to ~~operate~~ operate 15 minute service (usually half hour with one car) if 2 men ~~were used~~ - motorman/conductor were used: quicker fare/transfer transaction, changing ends, open/close trap door, etc.

At some unknown time, DSR 29 was shipped to SPCR shops for modifications, returned to DSR, and assigned to the Ht A line, probably to replace ~~the~~ the ill-suited 95.

435

Realign this by number; seperate Incline & Highland

Incline

The original incline cars carried 4 teams of horses & wagons, or 250 passengers. Turnstiles at top. Test run ~~4-4-92~~ took 16 min.

Duluth News/Tribune of Sep. 8, 1889: "The Dawn of a New Era... a stupendous project which will put the Zenith City upon a metropolitan basis."
On opening day 4 July 1892 some 16,000 persons paid a nickel each to ~~attend a concert~~ a concert by the city band & hear 17 yr old Jessie Miller play the cornet.
DSR & HIC shared the cost of the band
It was here that the city's first symphony orchestra played in 1895.
A favorite was Robert Mantell who during a one-week stand in Aug 1898 drew 1000 persons nightly to his one-act skit.

The up-bound car made its first station stop near 1st St while simultaneously the south bound car made its stop near Blvd/W. 9th St. The second stops were near 3rd St and 5th St. And both cars met & passed at 4th St

In its final yrs of operation it had annual operating losses of #20,000
Public outcry: Duluth without the Incline was like Atlantic City without the boardwalk.

P. A. Huzkas who had been engineer/operator for 26 years, was operator of the last trip at 5:35 pm. Labor Day, Sep 4, 1939, connecting at 8th St (up-bound) with Highland Line St. car #255 which departed promptly for a round trip to Duluth Heights, returning to the 8th St terminal at 6:04. Thereafter, buses, on a slightly altered routing, began serving the Central Hillside and Duluth Heights.

These were the last st car operations in Duluth/Superior ~~(sec 6.23)~~

The unprofitable operation of the Incline/Highland line is reflected in the actions of a 3-1-98 DSR (DST) directors meeting in which it was resolved that "... DSR confer with ~~the~~ (HI) and ascertain what arrangements, if any, can be made whereby they shall contribute in whole or in part toward the losses incurred by this co. in the operation of the Incline and the Highland Lines..."

From "Earnings record" 1-19-92 #1.10/22 fares 7-4-92 734.85/14697 fares

Describe operation
" of cables: pull, tail, grip, automatic (centrifigal) brake

4.35

WORK PAPER - (Lined)
FORM PT-9906 (3-1-64)

5.01

see page 3

Pavilion opened July 4 '93

Operations TAW Incline - Highland Ave.

DSR contracted with the Alhambra Theatre of Milwaukee to operate the amusement program at the Hill Top Pavilion, which usually opened for the season the last week of June. Band concerts were presented on Sunday year round. DSR paid band $30.00 per concert. All this ended when fire destroyed the pavilion in May 1901.

Although platted and provided with the normal street numbers and names, the Highland line, for the most part, passed through a large, unsettled, unmarked area. Street names and numbers along the Highland line were, for the most part, merely names and numbers in the motormen/conductors' "Street and Avenue Guide" and on maps. But, interestingly and more practical, such bucolic landmarks as "Rock Pile", "White Rock" and "White Post" were shown in the guide.

Service began on Sep. 28, 1892. In retrospect, it seems almost ridiculous that MIC management made an obviously unfavorable decision when they purchased an open (summer) car for Highland Ave. service as it headed into Fall and Winter. But, it appears that that is exactly what they did; DSR furnished 400 brass tokens to MIC in November. However, the open car shows up again on an 1893 DSR equipment report as "stored without motors." Six days after service began on the Highland line, DSR took over operation of the line in a lease arrangement with MIC.

Records indicate that DSR took single-truck closed car #29 to Highland, but it is not known when service began with this car. S.S.

On those early-day rare occasions when mechanical/electrical problems caused the Incline to stall at other than station stops, it was necessary to dispatch a City Fire Department ladder truck to remove stranded passengers.

Sign erected July 1, 1936 "Duluth Sky Ride" (see wording in 6.35 file)

By its very nature, the Incline operation was labor-intensive. In addition to an engineer (motorman), two conductors who actually operated the Incline cars, were required to operate the two Incline cars. Additionally, two operators were required to operate the two Highland cars during rush hours. These were sometimes referred to as grip men To utilize crews more efficiently, a unique procedure required only three motormen/conductors to operate the four cars during rush hours. The conductor on the upbound Incline car transferred with his passengers to the waiting Highland car at 8TH St., and operated the north-bound car to the 13TH St. passing siding where he changed positions with the operator of the south-bound car, transferring with his passengers to the down-bound Incline car which he "picked up" on his regular ~~re~~scheduled down-bound in the normal manner. The cycle was being repeated on the new northbound Incline. To prevent unauthorized operation of the unoccupied, waiting Highland car, its controller reverse key was left with the Incline engineer.

Similarly the Highland car operator, upon completing his round trip, would turn over the car to the next scheduled operator.

4.35

(see 5.2)

Cav 29, purchased in Sep '90, wants into service a month later, Seattle SPC Req on March 1991 for modifications necessary for ~~non-standard service~~ service on ~~Highland~~ the Highland Ave's non-standard service beginning Sep 27, '92

4.36

#. Running time, Canal to 43rd St.,
~~½ trip~~, with normal stops was 57 minutes

4.31

Double-end Birney cars began operating on PARK POINT on Oct 1, 1919 (see also 5.33)

Piedmont

The Piedmont Ave. line began operations a record of some sort, 6-1-1910, 18 years after its construction was first ordered by Council. Perhaps DSR realized even in those early days that the low traffic potential did not justify the high cost of building the line. In unrelenting cost-control efforts, various routing combinations were utilized thru the year climaxed no less by the ill-fated through-routing with Park Point. When opened, 6-1-10 thru routed with W. 4th

The rail line was abandoned on 5-10-34, and, on Aug 5 became the western extension of Duluth expanded trolley bus operation. An interim, modified gas bus service began when repaving of the avenue was completed on July 12.

For many early day motorists, Piedmont Ave was a "boiling radiator/burning brakes" ??

West Duluth via Oneota St. DSR and

Competition for passengers developed between the several railroads ~~[illegible]~~ and DSR as the former expanded its operations in Duluth/Superior in the 1890s, eventually spelling the demise of the railroads' suburban and interstate "short lines". One of the earliest casualties was the St. Paul & Duluth (NP) service from downtown to Oneota and West Duluth. Both the Oneota St. and Grand Ave. routes to West Duluth produced excellent revenue for DSR. Cognizant of the high traffic potential, DSR was understandably annoyed by the several obstacles that delayed building of the Oneota St. line.

As the popularity of baseball grew, DSR found it necessary to provide ~~crowd-handling~~ additional facilities at the 34th Ave. W. ball park. ~~[illegible]~~ An 11-car storage track/siding was built in 1907 to facilitate crowd-handling.

Rail service west of 28th Ave. W. was abandoned 3-13-39, and replaced by gas buses over the same route.

~~For over 32 years the West Duluth and Aerial Bridge lines were through-routed/paired. During that time the economic climate of these two areas of the city declined.~~ So, when DSR determined that the time had come to utilize one-man street cars as a cost-reducing/labor-saving device, this line was chosen as the first ~~to~~ in Duluth to receive the cars: April 1, 1928

X The (residential and commercial) development of the Oneota community produced excellent revenue for DSR from day one. After WWI, however, much of the commercial activity west of the ore docks to 49th Ave. W. had shut down or moved elsewhere. And this very early residential area of the city seemed to be moving up the hillside. In a May 15, 1925 memo, the DSR Superintendent stated, "... it seems a shame that these trucks on Oneota St. cannot... be used on W. 8th St." A similar change was taking place along the Lake Ave. So./Aerial Bridge line. A steady decline in passengers brought about considerably reduced service on these, the West Duluth and Aerial Bridge lines, which, for 32 years

4.39

64th Ave. W. to loop:

Grand Ave., Polk St., 64th Ave. W., Grand Ave

Grand Ave.

As construction of the Oneota St. line got underway in Summer 1891, the West Duluth Village council, in an opportunistic mood, granted DSR a franchise to build another line on Grand Ave between that suburb and existing lines in Duluth. However, after years of haggling, ever-changing situations and plans, charges and counter-charges, the line was built and the alternate service began — 12 years after the original plan was proposed.

Events at the circus grounds (35th Ave. W.) and at the Denfold High school stadium (41st Ave. W.) produced much extra passenger traffic and special movements (see also 4.7)

Rapidly-increasing numbers of shipyard workers at Riverside and steel workers at Morgan Park during World War I severely taxed DSR's Grand Ave. operations. War-time restrictions made it difficult for DSR to obtain additional equipment. In spite of a war-time emergency appropriation of equipment (see 4.28), the leasing of several cars from TCRT (see 4.27), and the greatly beneficial addition of a loop and electric sub-station at 92nd Ave. W. (see 2.19), DSR was hard-pressed to handle the growth traffic and sometimes unruly crowds. (please see 6.7)

When the W. 3rd St. tracks were laid in 1896, the city engineer, unfortunately, forced DSR to lay its double tracks on 9'6" centers. The new, wide double-truck cars could not pass on this too-narrow clearance, and DSR, at its own expense, was forced to relay the tracks to wider centers.

Avenues in Norton Park — 00 to 00 Aves. W. are only feet apart. DSR made stops only at even-numbered avenues.

Circus grounds at 39th Ave. W.

4.40

Morgan Park, Gary, New Duluth

In 1900, when the Northern Pacific Rwy. acquired the Duluth to Carlton through Fond du Lac rail line from the St. Paul & Duluth Railroad, service beyond Fond du Lac was terminated and the tracks were torn up. The NP then provided several round trips daily to and from Fond du Lac utilizing a rail bus, dubbed the "Red Devil." The NP petitioned for and received permission, from the state railroad commission on Nov. 19, 1925 to discontinue this passenger/baggage rail service on Jan. 1, 1926. NP offered to lease the tracks to DSR as a means of maintaining service to the community. However, an improved highway built the previous year had considerably reduced passenger traffic potential in that sparsely settled area of the city. This, along with a high cost of building a connecting track from McCuen St. down to the NP tracks and erecting trolley wire to Fond du Lac did not seem economically feasible to DSR. Instead, a gas bus service was begun by DSR's subsidiary Duluth Coach Co., bringing to an end the oldest railway passenger service in Duluth

Street names changed in Morgan Park 5-1-30

old	New
4th St	88th Ave W
West Blvd	Idaho St

Two-5¢ fare originally on MP/GND cars. Reduced to one fare on

Passenger traffic on the MP/92nd Ave W line was relatively low initially. However, with US entry into WW I on 4-6-17 and subsequent employment of large numbers of workers at the Riverside shipyards, DSR was hard-pressed to furnish sufficient service (see also 6.7).

4.42

DSR and SRT entered into an agreement May 1, 1893 to equally share maintenance and revenues (ferry) in the operation of a ferry (no name of ferry Co.)

4.42/4.43

6/93 Ferry: West Superior Rapid Transit Co.
on a 50/50 basis:
fares & maintenance
on a monthly basis

6/93, 5/94 Ferry: Garfield & Lake Ave. line —
operated by DSR?

Q.43

(3b)

The Garfield Ave. line was a heavy-traffic line for DSR from its inception. A week after start-up operations, it was already carrying 1200 passengers per day — in competition with rival ferry boats. ~~And, with the collection of two fares, it was probably quite profitable, too.~~ By the following spring, cars were scheduled on a 2-minute headway! The Interstate line was the first to receive the new, large double-truck cars in 1901 (see 4.10 and 6.53c) And, with the collection of two fares on the interstate portion of the line, it was probably quite profitable, too. go to 3c

9a The Ship collisions, fires and major repairs closed the bridges for varying periods of time.

9c The bridge span was damaged again on Nov. 20, 1924 when it was struck by the steamer Farr. ~~The bridge was repaired and street car service restored a month later, on Dec. 19.~~ go to 3c While repairs were being made to the bridge, DSR arranged for repair substitute ferry service. Scows were obtained, and anchored and utilized to facilitate docking on both sides of the bay. Walkways connected the scows and street car loading/unloading platforms. A heated street car was parked nearby for passenger convenience in inclement weather. The bridge was repaired and street car service restored a month later, on Dec. 19.

3c DSR extended its Garfield Ave. tracks across the newly-built Duluth-Superior (Interstate) Bridge in Sept. 1897 (see 2.12a). DSR's tracks were standard gauge; SRTR's tracks were narrow gauge at that time. So it was necessary for passengers to change cars at the Superior approach to the bridge in this early day "interstate" operation. This inconvenience was resolved when SRTR converted its Tower Ave. and Connors Point tracks to standard gauge, providing a joint through-routing of interstate service beginning March 28, 1899.

2½ an hour

24 | 61
48
13

61 per day

31 | 1891
186
31
31

Operations

D-S Bridge openings in July 1902

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
39	37	41	35	46	39	51	56	52	53	55	50	42	52	113

Total 1891 openings

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
118	114	60	51	47	92	92	111	92	56	64	41	51	53	53	55

4.43 ~~[illegible]~~

Interstate line

4 The frequent passage of ships through the Duluth-Superior (Interstate) bridge during the navigation season caused frequent, annoying, disruptive — and sometimes lengthy — interuptions of service on the Interstate line.

5 On August 27, 1929, for instance, a quite typical day, there were 40 openings of the bridge in the 24-hour period. Total time open was 4 hours and 45 minutes — 285 minutes — for an average of 7.1 minutes per opening; maximum time open was 24 minutes. Bridge operators notified DSR's schedule department, setting wheels in motion to turn cars on wyes/loops at the bridge approaches, and to fill the voids in service caused by the interuptions.

6 There were periods when the bridges were closed to vehicular traffic during repairs. On one such occasion, the Lamborn Ave. bridge was closed to all but foot traffic for a month: March 1930. Passengers — nearly 3000 per day — were taken to the bridge approaches — both sides —, allowed to walk across the bridge, and transfer to cars on the opposite side.

8 During the lake navigation season — roughly March through November — the Interstate line was scheduled to perform a mostly interstate service, operating from 21st St. and Tower Ave. in Superior to 3rd Ave. East and Superior St. in Duluth. During the winter season, however, when navigation was shut down and an uninterupted service could be maintained, both ends of the Interstate line were extended to perform a local service as well. In Superior alternate trips went to 21st and Grand and to South Superior. In Duluth a variety of terminals were used: Armory, 24th Ave. E. and Crosley. These became year-round routings as traffic on the Interstate line dropped in the late '20s. Until the depression-induced decline in traffic, a 5- and 10-minute service was scheduled on this line, with additional Saturday-night extras to handle Duluthians attracted to the night-time fun spots in Superior.

7ba The main (draw) span of the Duluth-Superior bridge was knocked off the center pier into the bay waters on August 11, 1906 when it was struck by the freighter Troy. Street car and other traffic was not resumed

7d → until the span was replaced on Sept. 27, 1908 (7d) Immediately after these tragedies, DSR extended its tracks on Main St. in Superior and on Garfield Ave. in Duluth to temporary dock facilities where provisions were made for ferry connections across the bay to temporarily replace the interupted street car service, and the Northern Pacific Railway furnished hourly service between the Union Stations in Superior and Duluth.

~~RPT~~

Interstate line

7c On October 12, 1918 wind-borne embers from the forest fires that swept over the Duluth, areas adjacent to burned the Duluth approach to the Duluth-Superior bridge and seriously damaged the bridge proper, completely halting all use of the bridge. Street car service was resumed November 7 over one side (one track) of the bridge and full service on Nov. 20. Again, as before, temporary tracks, docks and ferry boat service were provided.

7bb Again, on Nov. 21, 1924 a span of the bridge was damaged by the steamer Fern. The span was replaced and service resumed on December 19.

(2) Superior, service being provided by the rival steamers R.G. Stewart and F.C. Fero. Scheduled departures from Duluth were at 7:00 and 9:40 a.m. and 1:30 and 4:00 p.m. Departures from Superior were at 8:20 and 10:50 a.m., and 2:30 and 5:20 p.m.

Horse cars began operating north on Tower Ave. to 3rd St. in the closing days of 1889. And these were replaced by electric cars seven months later.

The considerably increased interstate traffic between Superior and Duluth that this improved service produced, required also an improved ferry service. So, beginning 10-10-90, the ~~first~~ ferry services (above) were replaced by the Duluth-Superior Steamship Co. with hourly service from 6:00 a.m. to 6:00 p.m, using two ferry boats named — logically! — Superior and Duluth. Records show that DSR contracted with J.L. Sorenson for Connors-Rices Point service by its tug Lindrup in May 1893. (5-5-93) Why?

(3a) By the turn of the century, the Independent Ferry Line had assumed ~~seems to have taken over~~ the interstate ferry operation, providing 30 minute service by 3 ferry boats from 7:15 a.m. to 8:00 p.m. — "Always on time. Fare five cents." go to 3b

Boat names: Belle, Hattie Lloyd, Swansea

(1) Prior to the extensions of street railway tracks on Connors Point/Main St. and on Rices Point/Garfield Ave., and prior to the building of the Duluth-Superior (Interstate) Bridge in 1897, there were several modes of travel ~~across the bay~~ between the two cities. The interstate commuter could cross the bay on the Northern Pacific Ry's "short line" trains which began operating after the building of NP's two bridges and trestles across the bay in 1884-85, or one of several steam ferries, operations at which at times created rivalries of some concern. Operations of the ferries, beginning in the early 1880's variously from Tower Bay slip, near Tower Ave. and 2ND St. and from the tip of Connors Point in Superior to the Garfield Ave. tip of Rices Point and to Sutphins dock on Lake Avenue in Duluth, with (go to 2)

300 d-19-25
298 8-24-25

4.44

Allouez

The Allouez line, as originally built, on 4th St., crossed the Nemadji River and bottoms on a 2600-foot timber trestle and span (see 3.13). In June 1924 the 4th St. trestle was condemned as not safe for the passage of heavy vehicles; the heavy, standard cars could not be used on this line thereafter. These were replaced by Birney cars in a shuttle operation from the wye at 31st Ave. to the end of the line beginning June 19. The newly-acquired 300-class light-weight cars were assigned to the East End/Allouez line on April 19, 1925, and replaced the Birney shuttle operation on that date. As the condition of the trestle continued to deteriorate, even these were no longer allowed to cross the trestle, and, on ~~May 29, 1925~~ Birney cars returned for a shuttle operation. Even these were not permitted to cross the trestle after Oct. 31, 1928. Service over the replacement 2nd St. route began on Nov. 29 (see also 3.13)

Although considerable pressure had been put on DSR to extend its Allouez line into the community of Itasca, the sparsely settled nature of the area and lack of a suitable bridge over ~~the~~ Bluff Creek ~~River~~ made such an extension quite inadvisable. Instead, DSR instituted a bus line extension of the Allouez line beginning on July 13, 1925.

Birney cars operating to Allouez on 5-19-25 !

Billings Park

Thru routed with Bdwy line for many years. With the abandonment of the Bdwy half of the line on 6-25-31, INTERSTATE cars thereafter went to B P.

Originally routed to 3rd & Ogden. Thru-routed to Bdwy line when that line was built July 1917.

The first three one-man cars went into service 9-29-24 following WRC permission 9-25

To facilitate construction of a bridge over the Northern Pacific Ry. tracks on 21st St. (see 3.12), service on the Billings Park line was suspended from Aug. 19, 1929 until opening of the span on Jan. 1. An interim bus service via Belknap ~~Street~~ was furnished

6.47

Broadway

Bdwy - Billings Park thru-routing

The first three one-man cars went into service 9-29-24
following WRC permission 9-25

6.48

21st St

Abandonment of Bdwy & So. Sep. lines on 6-25-31 resulted in shuffling of ~~remain~~ INTERSTATE cars routes in Superior. Thereafter, all INT cars went to B.P. and 21st ST. cars ~~went to Bdwy~~ terminated at Tower & Bdwy

South Superior

Handling of crowds to the Fair Grounds (46th and Tower) (see 6.7) required the altering of operations/routing in Superior. All Superior-bound INTERSTATE cars went to South Superior, instead of 21st Street and Ground. That line, during these times, was served by a 21st & Ground to Broadway & Tower Birney operation

Originally thru-routed to 3rd & Ground.
Routed to 3rd & Ogden 11-1-18

School extras from South Superior to the high school at and Belknap used the wye track when turning from Tower Ave. to Belknap, not a normal revenue movement.

Of passing note was the unusual use of DSR's South Superior tracks. On Sep. 1, 1924 LST&T railroad crews engaged in the task of moving Great Northern Railways steam locomotive No. 1, the William Crooks, from its tracks to those of DSR on Tower Ave. near 8TH St. The elegant locomotive then steamed south on Tower Ave. to the fair grounds near 48TH St. where it was exhibited, retracing its route a week later.

4.53c

4 horse cars

The first 5 electric cars in Superior (see 4.31):
2 assigned to Tower Ave., 3rd to 21st Sts
3 " to East End to Tower Ave.
plus trailers
20 minute headway

1-man cars assigned to Interstate line 5-14-30

When first 12 dt cars were put on the Interstate line, 1901 A 10-min headway. 39 min running time

During the period of dual-gauge operation in Superior 1897-1902, 20 ~~cars~~ std-gauge cars ~~etc~~ were assigned to the INTERSTATE operation, and 11 narrow-gauge cars were assigned to the other lines which were not yet converted to std gauge.

4.18

Year	Passengers carried over Duluth-Superior Bridge and Steven's Ferry (Aug. 19, 1906, to Sept. 27, 1908.) Street Cars	Buses	Passengers carried over Arrowhead Bridge Buses
1900	351,546 (1)		
1	962,561		
2	1,167,214		
3	1,326,927		
4	1,207,724		
5	1,272,660		
6	1,324,869		
7	1,217,812		
8	1,267,862		
9	1,606,869		
1910	1,776,591		
1	1,705,532		
2	1,552,698		
3	1,948,525		
4	1,969,309		
5	1,671,869		
6	2,021,655		
7	2,711,757		
8	2,611,108		
9	2,674,035		
1920	2,421,129		
1	2,135,999		
2	1,909,368		
3	1,944,835		
4	1,621,832*		
5	1,664,635	222,807 (2)	
6	1,588,327	319,221	
7	1,349,687	288,623	84,712 (3)
8	1,260,164	167,185	158,753
9	1,083,035	161,436	143,830
1930	687,830	249,117	62,388
1	369,911	290,183	56,260
2	378,926	312,983	53,413
3	356,022	254,214	46,059
4	361,942	273,751	51,354
5	141,825 (4)	481,480	62,407
6	- -	675,714	70,876
7	- -	706,512	69,656
8	- -	626,793	67,595
9	- -	618,414	70,823
1940	- -	616,579	65,558
1	- -	622,417	61,621
2	- -	747,965	79,717
3	- -	1,055,929	100,693
4	- -	1,233,302	108,830
5	- -	1,222,662	109,914
6	- -	1,123,783	95,349
7	- -	1,108,968	95,857

(1) Begins Aug. 13, 1900
(2) " Apr. 12, 1925
(3) " July 20, 1927
(4) Ends June 5, 1935

*Includes ferry passengers.

Bus Passengers Carried Over -

Year	Duluth-Superior Bridge		Arrowhead Bridge
1948	1,104,917		105,477
1949	940,049		84,530
1950	848,972		84,689
1951	629,731		61,017
1952	621,706		59,500
1953	568,728		56,524
1954	473,306		43,547
1955	367,661		32,721
1956	364,667		8,740 (Jan. thru Apr.)
1957	323,911		-
1958	298,546		-
1959	242,710		178
1960	284,930		274
1961	244,620	Old Bridges*	
	21,522	New "	
Total	266,142		-
1962	248,887		-
1963	219,035		-
1964	212,687		
30-day Period Jan. 1-30, 1965	16,223		
Fiscal Year - 1-31-65 thru 1-29-66	218,853		-
1-30-66 thru 1-28-67	220,222		-
1-29-67 thru 1-27-68	200,763		-

* Old Duluth-Superior Bridge (Toll) closed 7:00 a.m. Dec. 3, 1961. New Duluth-Superior High Bridge opened Dec. 2, 1961.

Bus service over Arrowhead Bridge discontinued Apr. 30, 1956 (midnight).

4.18

Total Passengers.

Year	Duluth	Superior	Total
1891			
2			
3			
4			
5			
6			
7			
8			
9			
1900			
1	7,318,207	3,585,642	10,903,849
2	8,815,734	3,640,571	12,456,305
3	10,068,043	3,900,556	14,368,599
4	10,487,791	3,547,037	14,034,828
5	11,376,292	3,828,353	15,204,645
6	13,224,399	4,830,053	18,054,452
7	15,226,121	5,436,707	20,662,828
8	16,673,962	5,395,873	22,069,835
9	17,838,604	5,479,016	23,317,620
1910	19,621,673	6,145,977	25,767,650
1	20,244,173	5,849,888	26,094,061
2	19,320,775	5,725,345	25,046,120
3	22,794,559	6,959,269	29,753,828
4	23,624,306	6,782,705	30,407,011
5	21,629,220	5,706,238	27,335,458
6	25,749,691	7,043,271	32,792,962
7	29,420,624	8,181,825	37,602,449
8	30,143,796	8,985,702	39,129,498
9	35,033,472	10,225,655	45,259,127
1920	35,077,568	9,704,035	44,781,603
1	32,393,458	8,335,191	40,728,649
2	30,404,734	7,356,207	37,760,941
3	29,900,207	7,163,244	37,063,451
4	28,104,076	6,582,975	34,692,051
5	30,019,387	6,346,573	36,365,960
6	28,609,447	6,068,533	34,677,980
7	25,667,515	5,653,155	31,320,670
8	24,301,835	5,150,631	29,452,466
9	21,961,770	4,466,520	26,428,290
1930	18,239,488	3,631,007	21,870,495

See add'l sheets at back of book.

WSB 1/1/24

RAIL AND BUS REVENUE PASSENGERS

(Interstate passengers divided equally between Duluth and Superior)
To 12-31-34.

		DULUTH	SUPERIOR	SYSTEM
1933	Rail	9,788,414	1,341,387	11,129,801
	Bus	499,913	646,429	1,146,342
	Trolley bus	207,192 ✓		207,192 ✓
	Total	10,495,519	1,987,816	12,483,335*

* Includes 40 Interstate chartered bus passengers not entered in Pass. Record.

1934	Rail	9,361,366	1,463,234	10,824,600
	Bus	593,745	699,319	1,293,064
	Trolley bus	1,187,107		1,187,107
	Total	11,142,218	2,162,553	13,304,771
1935	Rail	7,780,184	672,609	8,452,793
	Bus	1,008,643	1,695,400	2,704,043 ✓
	Trolley bus	2,719,581		2,719,581
	Total	11,508,408	2,368,009	13,876,417
1936	Rail	8,182,916	- -	8,182,916
	Bus	1,377,656	2,758,907	4,136,563
	Trolley bus	2,869,510	- -	2,869,510
	Total	12,430,082	2,758,907	15,188,989
1937	Rail	8,059,287	- -	8,059,287
	Bus	1,704,714	2,821,514	4,526,228
	Trolley bus	2,826,066	- -	2,826,066
	Total	12,590,067	2,821,514	15,411,581
1938	Rail	7,058,702	- -	7,058,702
	Bus	1,980,990	2,513,645	4,494,635
	Trolley bus	2,648,956	- -	2,648,956
	Total	11,688,648	2,513,645	14,202,293
1939	Rail	3,534,661	- -	3,534,661
	Bus	4,496,478	2,531,185	7,027,663
	Trolley bus	3,632,090	- -	3,632,090
	Total	11,663,229	2,531,185	14,194,414
1940	Gas Bus	6,412,768	2,394,920	8,807,688
	Trolley Bus	5,189,591	- -	5,189,591
	Total	11,602,359	2,394,920	13,997,279
1941	Gas Bus	6,394,058	2,457,721	8,851,779
	Trolley Bus	5,322,621	- -	5,322,621
	Total	11,716,679	2,457,721	14,174,400

GAS BUS AND TROLLEY BUS MILES OF OPERATION

		DULUTH	SUPERIOR	TOTAL	
1943	Gas Bus	3,264,948	1,191,677	4,456,625	
	Trolley Bus	1,644,176	- -	1,644,176	
	Total	4,909,124	1,191,677	6,100,801	
1944	Gas Bus	3,427,669	1,349,898	4,777,567	
	Trolley Bus	1,748,926	- -	1,748,926	
	Total	5,176,595	1,349,898	6,526,493	
1945	Gas Bus	3,329,758	1,369,466	4,699,224	
	Trolley Bus	1,755,695	- -	1,755,695	
	Total	5,085,453	1,369,466	6,454,919	
1946	Gas Bus	3,275,931	1,306,318	4,582,249	
	Trolley Bus	1,719,448	- -	1,719,448	
	Total	4,995,379	1,306,318	6,301,697	
1947	Gas Bus	3,361,582	1,297,513	4,659,095	
	Trolley Bus	1,718,082	- -	1,718,082	
	Total	5,079,664	1,297,513	6,377,177	
1948	Gas Bus	3,311,143	1,261,957	4,573,100	
	Trolley Bus	1,704,427	- -	1,704,427	
	Total	5,015,570	1,261,957	6,277,527	
1949	Gas Bus	3,150,691	1,129,516	4,280,207	
	Trolley Bus	1,650,060	- -	1,650,060	
	Total	4,800,751	1,129,516	5,930,267	
1950	Gas Bus	3,069,992	1,052,746	4,122,738	
	Trolley Bus	1,576,891	- -	1,576,891	
	Total	4,646,883	1,052,746	5,699,629	
1951	Gas Bus	2,662,972	844,599	3,507,571	(Delivery mileage of 5,856 not included.)
	Trolley Bus	1,313,569	- -	1,313,569	
	Total	3,976,541	844,599	4,821,140	
1952	Gas Bus	2,452,469	731,515	3,183,984	
	Trolley Bus	1,333,134	- -	1,333,134	
	Total	3,785,603	731,515	4,517,118	
1953	Gas Bus	2,250,806	674,964	2,925,770	
	Trolley Bus	1,250,073	- -	1,250,073	
	Total	3,500,879	674,964	4,175,843	
1954	Gas Bus	2,103,574	635,085	2,738,659	(Delivery mileage of 6,940 not included)
	Trolley Bus	1,182,438	- -	1,182,438	
	Total	3,286,012	635,085	3,921,097	

GAS BUS AND TROLLEY BUS MILES OF OPERATION

		DULUTH	SUPERIOR	TOTAL	
1955	Gas Bus	1,990,919	553,854	2,544,773	
	Trolley Bus	1,052,674	- -	1,052,674	
	Total	3,043,593	553,854	3,597,447	
1956	Gas Bus	2,058,952	483,793	2,542,745	
	Trolley Bus	711,668	- -	711,668	
	Total	2,770,620	483,793	3,254,413	
1957	Propane Bus	)	)	2,172,595	(New coach delivery mileage of 9,490 not included)
	Gasoline "	2,185,009	418,509	430,923	
5-15-57 - Last day trolley buses in service.	Diesel "	66,714	- -	66,714	
	Trolley "	208,886	- -	208,886	
	Total	2,460,609	418,509	2,879,118	
1958	Propane Bus	1,025,501	275,088	1,300,589	(Coach delivery mileage of 18,780 not included)
	Gasoline	-	134,679	134,679	
	Diesel	1,167,445	-	1,167,445	
	Total	2,192,946	409,767	2,602,713	
1959	Propane	640,233	317,169	957,402	(Delivery mileage of 670 not included)
	Gasoline	-	-	-	
Strike -	Diesel	1,152,516	-	1,152,516	
	Total	1,792,749	317,169	2,109,918	
1960	Propane			856,860	(Delivery mileage of 11,792 not included)
	Gasoline	(Not available)		-	
	Diesel			1,449,366	
	Total	1,976,328	329,898	2,306,226	
1961	Propane	422,297	55,730	478,027	(Delivery mileage of 150 not included)
	Diesel	1,495,130	267,337	1,762,467	
	Total	1,917,427	323,067	2,240,494	
1962	Propane	458,541	59,822	518,363	
	Diesel	1,434,330	248,674	1,683,004	
	Total	1,892,871	308,496	2,201,367	
1963	Propane	417,809	34,598	452,407	(Delivery mileage of 3,500 not included)
	Diesel	1,395,447	268,038	1,663,485	
2 Strikes -	Total	1,813,256	302,636	2,115,892	
1964	Propane	311,198	24,846	336,044	
	Diesel	1,465,971	279,983	1,745,954	
Strike -	Total	1,777,169	304,829	2,081,998	

MILES OF OPERATION

		DULUTH	SUPERIOR	TOTAL	
30-day Period Jan. 1-30, 1965	Propane	28,378	2,930	31,308	
	Diesel	121,698	22,700	144,398	
	Total	150,076	25,630	175,706	
Fiscal Year - 1-31-65 thru 1-29-66	Propane	264,312	19,221	283,533	(Delivery mileage of 13,855 not included)
	Diesel	1,553,207	298,647	1,851,854	
	Total	1,817,519	317,868	2,135,387	
1-30-66 thru 1-28-67	Propane	132,173	3,303	135,476	(Delivery mileage of 14,320 not included)
	Diesel	1,688,770	326,566	2,015,336	
	Total	1,820,943	329,869	2,150,812	
1-29-67 thru 1-27-68 Strike -	Propane	15,368	-	15,368	(Delivery mileage of 12,168 not included)
	Diesel	1,736,194	319,956	2,056,150	
	Total	1,751,562	319,956	2,071,518	

4.24

BUS OPERATION - Starting Dates of Bus Lines and Extensions Thereof

1924 Dec. 18 Morley Heights bus line - operated by Duluth Coach Co. between Morley Heights and Woodland street railway line at Lewis St. (Duluth)

1925 Jan. 28 Calvary line - From end of Woodland rail line at Austin St. to Calvary Cemetery.
May 20, 1926 - Extended through Arnold district.
July 7, 1930 - Duluth-Superior Coach Co. discontinued service on Calvary-Arnold line. Rights transferred to Walter Sahlen who started operation on July 8, 1930.

Apr. 12 Duluth-Superior intercity line acquired from Superior White Co.

July 13 Itasca - From Allouez to Itasca (Superior).

1926 Jan. 1 Fond du Lac - From McCuen St. in New Duluth to Fond du Lac.

1927 July 20 Arrowhead - intercity - (From Duluth downtown district to Superior via Arrowhead Bridge)
Apr. 1, 1930 - Buses over Arrowhead Bridge run to West Duluth only.

1928 June 15 Boulevard line (Duluth) - From 6th Ave. E. & 7th St. to the outer junction of the Hutchinson and Hermantown Roads.
Nov. 22, 1928 - Service on Boulevard between Piedmont Ave. and 3d Ave. W. discontinued.
Nov. 1, 1929 - Service between 3d Ave. W. & Boulevard and 7th Ave. E. on 7th St. discontinued.

1931 June 16 Park Point (Duluth) - Bus service substituted for rail service.

6TH St. line
June 26 South Superior (63d St. to 3d St. on Tower Ave.) and Broadway line (17th St. to 3d St. & Grand Ave.) in Superior - Bus service substituted for rail service.

Oct. 4 First trolley bus operation - From 44th Ave. E. to 61st Ave. E. on Lester Park line (Duluth).

1932 Jan 1 Corporate change to Duluth-Superior Bus Co.

1934 Aug. 5 Trolley bus service from Lester Park (61st Ave. E.) to Piedmont Ave. & 10th St.
(Trolley bus service on Piedmont Ave. - Superior St. to 10th St. - reduced to morning and evening rush hour trips after 1939. Service entirely discontinued in May 1947 which was then limited to only one trip during the morning rush. Overhead removed during the years 1948 and 1949. Line served by gasoline buses.)

July 22 Bus service on 23rd/24th Aves E. between Superior & 4th Sts., clockwise

1935 Mar. 5 Allouez line in Superior - Bus service substituted for rail service.

June 6 Bus service on Duluth-Superior Interstate, Billings Park, and 21st St. & Grand Ave. in Superior substituted for rail service.

1935 June 24 Street cars off Belknap St. and bus service substituted. Complete bus service on Interstate and all Superior local lines.

1936 Aug. 31 Kenwood line - 7th Ave. E. & 9th St. to St. Marie St. (Duluth) - Rail service abandoned and bus service substituted.

Dec. 13 West 4th St. bus service inaugurated - Sundays only. (Duluth)

1937 Jan. 4 London Road line - 23d Ave. E. & 4th St. to 26th Ave. E. & London Road. (Duluth)

May 5 Gary-New Duluth (Cement Plant to McCuen St.) - Bus service inaugurated a/c abandonment of tracks in connection with re-paving.

June 1 West 8th Street line - 39th Ave. W. & Grand Ave. to 57th Ave. W. & 8th St., via Grand Ave., 40th Ave. W. and West 8th St. (Duluth)

June 6 Cement Plant wye put in use.

July 12 Bay View Heights line - 56th Ave. W. & Grand Ave. to Boundary Ave. & Vinland St. (Proctor), via 57th Ave. W., Highland St. and Vinland St.

Nov. 1 Hermantown bus route extended to Haines Road.

1938 June 21 Park Point buses operated through to City's new recreational center at 49th St. on Park Point. (Summer months only)

Nov. 20 Gas bus service started on West Duluth line between Park Point and 62d Ave. W. & Raleigh St. after 7:30 p.m. on weekdays and all day on Sundays and holidays.

1939 Mar. 13 Complete gas bus operation on West Duluth line - (via Oneota St.)

July 9 Bus service completed on all lines in Duluth except Incline and Highland. Trolley buses on Grand Ave. to 64th Ave. W. Gasoline buses on Woodland line via East 4th St. pending completion of overhead trolley construction from 24th Ave. E. to Austin St. (Woodland).

Sept. 4 Last trip run on 7th Ave. W. Inclined Railway. Gas bus service substituted.

Complete changeover to bus operation in Duluth.

Nov. 4 Trolley bus service on Woodland line to Austin St. loop - (end).

Nov. 4 Abandonment of bus service on London Road line - 23d Ave. E. & 4th St. to 26th Ave. E. & London Road.

Dec. 4 London Road service reinstated for trial period - 3d Ave. W. & Superior St. to 26th Ave. E. & London Road. Service scheduled daily except Sundays and holidays.

1940 Feb. 15 Morley Heights line extended to serve Morningside Park.

Apr. 14 Arrowhead (Interstate) and Bay View Heights routes combined.

June 15) to Sept. 22) West 4th-Boulevard line extended to serve Enger Park. (Order of Minnesota Railroad & Warehouse Commission dated Oct. 20, 1941 granted authority to extend W. 4th-Blvd. line to serve Enger Park during June, July, August and September of each year.)

1941 Apr. 20 Extension of Duluth Heights line along Swan Lake Road to Allen Ave.

Sept. 25 Duluth Heights line extended to Morgan Ave. and Swan Lake Road-one block.

Dec. 20 Extension of Bay View Heights line into Village of Proctor.

1942 Sept. 8 Trolley bus and gas bus loop on south side of street at 45th Avenue West & Grand Avenue (Duluth) put in operation. (Moved to north side of Grand Ave. at 45th Ave. W. December 29, 1944.)

1943 Nov. 10 West 4th-Boulevard line - Alternating service on the Boulevard by running one trip to 5th Ave. W. and the next trip to 11th Ave. W. (during the eight months when no service is operated to Enger Park).

1944 Dec. 29 45th Ave. W. trolley bus loop on the north side of Grand Ave. put in use.

1946 Aug. 15 Morley Heights line extended to serve the St. Marie, Dunedin Ave. and Arrowhead Road district.

Aug. 17 Broadway line in Superior extended to Catlin Ave. and Winter St.

1947 July 17 Trolley bus ~~loop~~ wye at 24th Ave. East & Superior St. put in operation.

Dec. 1 Duluth Heights bus service split at Highland Ave. and Palmetto St. to provide loop service to two separate districts - Anderson-Trinity Rd. area and the Maple Grove Road-Eklund Ave. area. (Trinity and Eklund loops)

1948 Sept. 1 Bus service to Piedmont Heights (formerly Hermantown) split at Piedmont Ave. and Morris-Thomas Road to provide loop service to the Morris-Thomas Road area. (Morris-Thomas loop)

1957 MAY 15 LAST DAY OF TROLLEY BUS OPERATION. ALL CONVERTED TO GAS BUSSES.

1958 May 4 Present Morley Heights-Dunedin trips extended to Kenwood Avenue (Town and Country Shopping Center) via Arrowhead Road.

1959	Aug.	16	Woodland line extended from Austin St. along the Calvary Road to the intersection of Calvary and Arnold Roads.
	Sept.	25	Extension of East 8th Street line into University of Minnesota-Duluth campus - from Snelling Ave. & 19th Ave. East to terminal at UMD.
1960	Sept.	7	Extension of Kenwood line nine-tenths of a mile westerly on Arrowhead Road to Capehart Project (new housing project for Air Force personnel). Two trips on school days at regular rates of fare.
1962	Jan.	26	Woodland line extended westerly 2/10 of a mile along Calvary Road to a new turnaround near Chicago Avenue.
	Nov.	5	Piedmont Heights line extended to operate on Chambersburg Avenue between Piedmont Avenue and the Morris Thomas Road.
1965	Mar.	1	Piedmont Heights line extended from the intersection of the Haines Road and Piedmont Avenue northerly along the Haines Road to Anderson Road, along Anderson Road to Decker Road and southerly along the Decker Road to Piedmont Avenue.

4

~~6~~.36 Park Point

a. Preface

Although the 7th Ave. W. Incline was the most unique among DSR's operations, and received, perhaps, disproportionate attention and publicity, the Park Point line was DSR's most varied and interesting and, ~~probably,~~ unfortunately, the most unprofitable and most difficult to operate.

b. Early history

It is no less difficult to condense this absorbing story into this brief monogram. If optimism was an essential ingredient in planning and building a street railway, early promoters of Park Point public transportation must have been endowed with an extra-large portion. The limited land size of this narrow peninsula/island, its isolation and its forbidding soil of drifting sand were, by their very nature, obviously limiting factors, and greatly to be reckoned with, in determining potential passenger traffic then and later.

The early inhabitants of this geographically unusual land area were summer-only residents living in beach cottages. Travel by land was all but impossible because instability of shifting/drifting sands hampered the building and maintenance of roads. Transportation from and to the mainland was primarily by boat, much of it across the Bay from Superior's East End, and a service provided by the Peabody Ferry based at 24th Ave. E., Superior. June 1871.

Isolation of Park Point became more acute after the Duluth ship canal was dug across The Point in ~~1872~~. A rowboat ferry service across the Canal was begun in 1883 when "ferryman" Charles Winters began a daily 6 a.m. to 10 p.m. service; 5¢ per single trip, $1.00 per month. Steam ferry service began in 1897. The City of Duluth took over operation of the Canal ferry in May 1899, providing a much improved service. During the winter when ice prevented operation of the ferries, and when navigation on the lakes and in the harbor was closed down, a temporary foot bridge was erected across the Canal, suspended between two 28-foot towers.

It was the elements-pleasant summer weather-that attracted summer residents and crowds to its beaches. And it was the elements, too-severe winter weather-that shut down the early horse cars and trolleys during the winter months. Their constant battles with the elements were a never-ending challenge for the several managements, who never paid a dividend and who operated the rail line in later years with considerable financial deficits. But the economic and physical adversities that troubled those early managements through their brief careers were challenges to develop innovative services and equipment. (see 2.21).

c. Early horse car/rail operations

Although MPSR (see 1.12) reported on Dec. 18, 1888 that it had built 1¼ miles of narrow gauge track, there was no operation that year or the following year. Already, at that early date, the builder was asking Council for help in solving the problem of drifting sand. The Village granted extension of an operating deadline to May 15, 1889. However, it seems that the first operation of the little narrow-gauge horse-car line probably did not occur until the following summer (of 1890) (see 2.21) when four retired DSR horse cars were taken over to The Point (see 4.56b and 6.12). Single horses were used; planks were laid on the ties between the rails for the horses, inasmuch as the tracks were laid in sand, there being no improved or hard-surface streets. Management reported three miles of horse car line in operation two years later (1892) when four more retired DSR horse cars went over to The Point.

d. Electrification

Things looked much brighter for Park Point residents in spring 1899 when a new management, Interstate Traction Co., acquired the street railway franchise, when the line was electrified, and when the city took over operation of the ferry. Sidings were added to improve operations, and there were 3.5 miles of track.

But best of all was the purchase of four ~~new~~ standard-gauge closed passenger cars (see 4.36). There was some dual-gauge operation during this conversion

Though management sought security and permanence, nature provided neither, where wind & waves for its passengers, shifted sand and eroded shores. challenged men and machines

period. Two open trailers were obtained from DSR the following year (1900). The City began 15-minute ferry service for 18 hours daily. A new boathouse and pavilion were erected at Oatka Beach (39th St.) in 1901. ITC assumed operation of the facility and built an auditorium the following year "...featuring...free Third Regiment Band concerts every Sunday afternoon (and) fine orchestras every evening". The additional passenger traffic generated by all this necessitated the purchase of another open electric car and a third open trailer from DSR that year. The open cars were popular, and the trolley line was hard-pressed to haul the crowds.

In 1902 the Duluth Boat Club built a large boathouse, Olympic-size swimming pool, pavilion, viewing stands and other boating/marina facilities on the Bay side at 10th St. "...so glamorous that (it) became the social center of Duluth..." and drew large crowds to its regettas and particularly to its world-famous sculling (rowing) crews, which hosted the national meet in 1916. ITC extended its tracks to 43rd St. in May 1904 to serve a planned picnic and amusement area.

The winter of 1903-04 was the first of year-round operation, it having been a summer-only operation before this time. Unfortunately, however, this first winter operation proved to be an exceedingly difficult one! It was necessary to use dynamite in an effort to keep the line open in March (1904) when snow and huge, wind-driven ice packs crippled operations. Winter operation was cruel, too, for the motormen who operated the cars, all of which had open platforms. Some relief was afforded by canvas windshields with a single plastic window draped across the front of the cars.

e. The Aerial Bridge is built

Building of the Aerial Bridge across the Canal (see 7.8) ~~which began operations on Feb. 23, 1905~~, had a great demographic impact on Park Point. This all-weather, considerably-improved connection of Park Point with the mainland not only began a trend to year-round residence and increased numbers of summer residents, but was the catalyst for real estate, commercial and recreational development, and greater crowds going to the beaches and picnic areas. ITC seems to have anticipated the increased passenger traffic that it would be expected to handle. Two new, elegant, large, 41-foot, double-truck cars with closed platforms went into service in June 1905 (see ~~4.29~~ 5.29).

ITC collaborated with the Duluth Amusement Co. in the building of a large amusement park, White City, at the south end of the line in 1906, necessitating the purchase of more cars (see 5.36). DSR also subscribed $3,300 for development of White City. Unfortunately, the amusement park venture was not financially successful after only two seasons of operation, probably because the season was too short to gain favorable return on investment, and it reverted to a picnic area.

f. Additional services

The now sizeable and growing Park Point community looked to its trolley line for more than its original franchise requirements of merely hauling passengers. Several additional services were offered, beginning in 1907, some of which were quite unusual among trolley operations, brought about by the total lack of improved streets and any other form of land transportation.

A trolley funeral car was made available by ITC to meet the hearse at the Aerial Bridge (see 4.57b). Flat car trailers for trolley freight service were also available for hauling furniture, groceries, coal, and what-ever for a nominal fee of 50¢, Normal procedure was for a regular car in passenger service to pick up the loaded trailer at the Bridge or on the 8th St. wye and drop it off in front of the customer's home, whose duty it was then to unload the trailer car quickly before the arrival of the passenger car on its return trip. A financial report for the year 1914, for instance, shows that of a total income that year of $23,272, $1,830 was from "freight haulage" (see 6.18).

Most unique on The Point--or anywhere, for that matter--was the fire car, converted from one of the open passenger cars obtained five years earlier from DSR (see 6.16). With little or no modifications to its original form, the car was equipped with ladders, hoses, pump, and all other necessary and customary equipment. Put in service on August 14, 1907, it was maintained and operated by the street car company, and was housed in a frame building across the street (Minnesota

Ave.) from the 19th St. car house, and for all of which the company received $30 a month from the City. The fire car and its equipment were owned by the City, and the car's operation was indirectly supervised by the Duluth Fire Department--"DFD" appeared on the car's dash below the headlight--which furnished a fireman* who lived nearby and who was on 24-hour call. At the sound of an alarm at the fireman's home and at the carhouse, the fire car would be run quickly, bell ringing and red light flashing, to the site of the fire, picking up volunteers along the way. Passenger cars it met along the way were compelled to "change ends"-reverse-quickly and preceed the fire car on its mission. Upon arrival at the fire, or whatever, passenger-car crews were expected to assist the fireman.

When through operation of the Park Point line over the new Lift Bridge began in March 1930, the office and car house at 19th St. were closed, leaving no DSR employees stationed on The Point. Termination of these facilities on The Point meant the end, also, of the fire car operation and abandonment of the building that had housed it. In exchange for the fire car, which the City no longer wanted, the building was offered to and accepted by the City, and used thereafter to house a fire truck.

On several occasions through the years of its operation, the residents of The Point reaffirmed their desire to continue use of, and dependence on, the fire car over more conventional equipment, convinced that the car maintained property values and was better able-with the help of the street car snow plow-to get through winter snows, and arrive more quickly than fire trucks dispatched from the mainland. In 1927, for instance, 12 alarms were answered, utilizing the car and crew for 8 hours and 20 minutes--average of 41.6 minutes per call. The personnel, operation and funding were relatively unchanged in 23 years of service.

g. Acquisition by DSR

Paving of Lake Ave. in 1914 and Minnesota Ave. in 1915 reduced the line to single track, and spelled the beginning of a rapid, uninterupted downward slide in the fortunes of the trolley line, resulting in deficit operations every year thereafter. Track mileage now had been reduced to 3.6. Reorganized twice in two years as the Park Point Traction Co. (PPT), the operation was brought to its knees by an unusually heavy snowfall on March 16, 1917, from which it did not recover. DSR and the City dug the line out. DSR assumed operations on July 1, and accepted transfer of the PPT title (franchise) on August 25 for $1.00.

Every possible device was utilized to provide good service thereafter in spite of the line's quite run-down condition, operating difficulties, and severe annual financial losses. Freight service was terminated (see 4.18).

In DSR's efforts to economize, a novel labor-saving technique was begun Dec. 6, 1917 ~~on the Park Point line~~ utilizing two cars, furnishing a 20-minute base service in a unique manner with three men : two motormen, and only one conductor who "worked" both cars by getting off a south-bound car at the 27th St. meeting point, boarding the north-bound car; the south-bound car then continued to 43rd St. and return as a one-man car on that portion of the line with lesser traffic and a generous layover.

Further economies were sought when DSR put three one-man Birney cars on The Point on Sep. 24, 1919 (see 5.33). These were supplemented and/or replaced temporarily by the large, double-truck cars during periods of heavy snowfalls or large crowds going to the beaches. The introduction of the one-man Birney cars on the Park Point line was one of DSR's simultaneous first ventures into pay-as-you-enter(PAYE) operations, using the Johnson fare box (see 6.11). The four large, double-truck cars were converted to one-man operation and PAYE fare collection at the same time.

Sparsly settled Park Point produced few regular passengers, but on a 1922 summer Sunday, DSR carried 10,800 fares with nine cars.

By the late '20s it became evident that the ferrying operation of the Aerial Bridge was seriously inadequate to handle the steadily increasing traffic to and from The Point, and plans were made to replace it with a lift span (see 7.12). A ferry-and-barge service ~~utilized~~ during the ten months of bridge ~~construction was~~ rebuilding, which began July 1, 1929, was provided and operated by the City

* Although this fire protection depended on back-up volunteer firemen, W.W. Forsythe was responsible for over-all supervision during the 23 years of operation and responded to all calls. The car operator during these years was most frequently PPT/DSR employee John Nyberg. Pipeman of the DFD for instance

able to handle only a very limited number of vehicles, which created, temporarily, an increase in passengers for DSR. The four double-truck cars were restored to full-time service, and the Birneys were returned to the mainland.

h. The Lift Bridge

Conversion of the Aerial Bridge to a lift span included the placing of double tracks on the span and on both approaches (see 2.20), providing a through rail connection to the mainland for the previously isolated Park Point line.

Many and varied alternatives were considered on how best to integrate the Park Point line into DSR's system. Management quickly found, at community meetings on The Point, that there was much resistance to any plan to terminate north-bound cars at Morse or Superior Sts. By Nov. 1929 the several other possibilities were narrowed down to through-routing the Park Point line with the Piedmont Ave. line, using the four double-truck Park Point cars. On Feb. 8, 1930 the construction of the bridge and street car tracks on the new bridge span had progressed sufficiently to permit the first of the four Park Point cars to cross the bridge and be taken to the company's 27th Ave. W. shops for major modifications that would make them compatible for operation on the mainland (see also 5.46).

Bridge construction proceeded sufficiently to allow the first scheduled street car operation across the span in early morning of March 12, 1930. Although careful and detailed effort had gone into the planning of this new operation, there were many glitches and serious break-downs in the service almost immediately, After a week of desperate efforts to rectify the difficulties, operating department, in utter frustration, resolved the dilemma by terminating the inbound Park Point cars at 8th Ave. W. instead of routing them up Piedmont Ave. as in the original plan.

The carhouse and other facilities at 19th St. were abandoned at this time, all cars and other equipment were thereafter operated from and serviced at the 26th Ave. W. facility.

i. Decline and abandonment

The convenience to travel that the new bridge now provided was a mixed blessing; the conditions that made street car service faster and more convenient also made the use of the private auto more convenient, too, for both Park Point residents and beach-goers, and did not materially slow the steady decline of passengers and revenue that had persisted for nine years:

Year	Revenue passengers carried	Deficit
1917 (4 months)	81,918	$ 8,370
1918	305,329	22,008
1921	415,892	14,736
1922	347,959	18,165
1929	215,884	23,633
1930	185,778	15,285

During this time, DSR had not materially reduced the service, it averaging about 132,000 car miles of service annually. DSR determined that it could not continue rail service in the face of increasing costs and declining revenue. Costly relocation of the tracks between 39th and 43rd Sts,. a minimum of $12,000 in other track and trolley improvements, and two full-time track maintenance personnel would be necessary if rail service was to be continued. After many months of appeals and hearings, which began on July 11, 1930, DSR was permitted to end rail service and substitute buses May 15, 1931, thus ending a colorful operation, but one that heaped more than its share of problems, headaches, and frustration on management and employees.

j. Schedules

From 1905 to 1930, scheduling and operation of street cars on The Point and on the Aerial Bridge (Lake Ave.) line was coordinated with operation of the Aerial Bridge which was owned, operated, and scheduled by the City of Duluth. Please see 6.14. And for fares on The Point please see 1.13.

DULUTH-SUPERIOR COACH COMPANY

DATA ON BUS ROUTES

	Morley Heights	Calvary Arnold	Interstate Line	Itasca Line	Fond du Lac	Herman-town.
Date Service Started	12/18/24	C.A.5/20/26 Cal.1/28/25 (Mass 7/6/30)	DSB.4/13/25 A.B.7/20/27	7/13/25	1/1/26	6/15/28
Route No.	1	2	3	4	5	6
Route Miles	1.47	5.85	Loop 15.60 A.B. 11.07 DSB. 7.44	4.16	3.28	2.33
Round Trip Distance	1.64	6.33	Loop 16.60 A.B. 20.23 DSB. 14.21	8.46	6.56	4.00
Headway (Min)	20	40-30	A.B. 30 DSB. 20	40-20	60-40	30-40
Buses Required	1	1	6	1	1	1
Running Time Between Termini (Minutes)	8 up 7 down	25	Loop 54½ DSB. 28½ A.B. 35	Reg. & School Trips-15	12	12 up 8 down
Mean Bus Speed (Mi. per Hr.)	6.15 up 7.03 down	15.19	14.99	11.25	16.40	10.00 up 15.00 down
No. Round Trips Weekdays & Sat----	53	31	52	42	14	29
Sundays & Holidays	50	27	46	40	13	23
Sched. Mileage Week. & Sat.	100.18	211.51	724.68	137.84	85.28	118.16
Sun. & Hol.	95.26	186.19	642.24	131.84	78.72	94.16
Rate of Fare:	Same as St. Ry. Fare	10¢	25¢ (20¢ W.Dul. to Sup. with Transfer)	10¢ cash 4¢ tkt.	25¢ cash 15¢ tkt.	Same as St. Ry. Fare.

Temporary bus service run as follows during building of 21st St. viaduct:
14 St. & Ogden to Billings Pk. Loop) Alternate trips
14 St. & Ogden to Iowa Ave. Only)
Service started 8/19/29, Discontinued 12-31-29.

Bus Service on Boulevard and Seventh Street Lines run as follows:
Piedmont to 6th Ave. E. 6-15-28 to 11-21-28.
3 Ave. W.to 6th Ave. E. 11-22-28 to 5-31-29.
Piedmont to 6th Ave. E. 6-1-29- to 10-31-29.
Service discontinued permanently 11- 1-29.

VA
11/19/29.

one side of the Duluth-Superior bridge and not until November 20, 1918 that both tracks were used.

Influenza Epidemic

4,1 The influenza epidemic of the fall of 1918 which caused a ban to be put upon all public gatherings seriously affected street railway earnings in Duluth and Superior. The passenger revenue for the months of October, November and December, 1918 instead of showing an increase over the corresponding period of the preceding year showed an actual decrease of $38,933.35 and a conservative estimate of the loss in revenue to the company due to the epidemic would be $50,000.

4.17

For carrying US Mail:

$140 per year

$125 extra for Lakeside

$250 " " Woodland

$125 extra for Lakeside

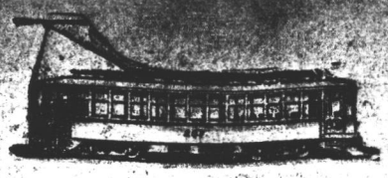
$250 Superior

Neither Co could carry

express or freight

3-15-10

4.1 1910 was a "red letter" year for DSR: 10 new double-truck cars, the considerably increased hiring of motormen and conductors, DSR: tracks on Piedmont Ave., renewed tracks on Garfield Ave. and Grand Aves. and 10 new double-truck cars. Wow! And the introduction of a new cognomen "Twin Ports Electric Lines", which appeared first on the March 15, 1910 time table.

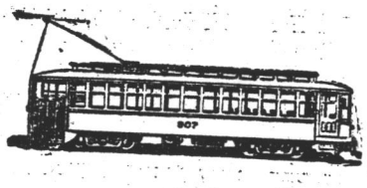


The morning rush flows into town
The evening rush away,
One way though empty cars run up
Expense that fares must pay,
And half of our production thus
Forsooth, is thrown away.

One of the serious problems that confront this company—and, indeed, every street railway company the world over—is the difficulty of handling the very large one-way traffic. The necessities of business require that practically at all times during the day the bulk of traffic on street railways is in one direction only, leaving empty cars traveling in the opposite direction.

For instance, between 7 and 9 o'clock each morning cars going into town are well filled, while cars going out are almost empty. In the evening, between 4:30 and 6:30, the reverse is the case.

Similarly, when we provide special service for some big event, say a ball game. People see the cars taking the crowds away and say, "Gee! the street railway's making money." They are amazed when told that such special service is given at a loss because, largely, it is one-way traffic. The reason we provide cars on such occasions when possible is because it is our desire to give "SERVICE" to accommodate those who want to ride.



Notice to Street Car Patrons:

Under instructions from the city council, street cars will not be permitted to run through West Duluth while the 4th of July parade is in progress.

As the line of march will be along Grand Avenue as well as on Central Avenue, this will seriously interfere with street car service to and from 57th Avenue West and Medina Street, Morgan Park and New Duluth, as well as service upon the Oneota Street West Duluth line. It will also effect transfer connections and service to the eastern termini of the lines involved, notwithstanding our best efforts to so arrange the schedules as to confine the interruption to West Duluth as much as possible.

Cars going to West Duluth from the center of the city or from New Duluth and Morgan Park after 8:30 a. m. will be affected and it will probably take until noon to get the service completely straightened out.

We regret the inconvenience this will cause to pleasure seekers on the holiday or street car patrons having more important business, and we give this notice so that all such patrons may be advised of the cause and may as far as possible make their plans accordingly.

Twin Ports Electric Lines

Big Returns

Electric railway extensions in New York costing 13 millions actually created new land values amounting to 80 millions, as estimated by the New York City Club.

Thousands of Duluthians have had the value of their property doubled or tripled by the building of street car lines.

Can you think of any investment that is more profitable to a community, or more vital to its progress than the Street Railway System?

Just as the public must depend on the trolley to bring these benefits to the community, so must the trolley depend upon the public to make such development work possible.

TWIN PORTS ELECTRIC LINES

Where

does No. 2 go?

No. 5?

No. 17?

To answer such questions regarding the numbers displayed in the motorman's window we are publishing a complete list of these numbers, together with the destinations which they indicate.

You are invited to glance over them and check up your memory:

0—26th Ave. W. and Superior St.
1—62nd Ave. W. and Raleigh St.
2—Aerial Bridge.
3—3rd Ave. E. and Superior St.
4—4th St. and 24th Ave. E.
5—5th Ave. and 4th St.
7—Austin St. and Woodland Ave.
8—8th Ave. W. and Superior St.
9—McCuen St.—New Duluth.
10—10th St. and 23rd Ave. W.
11—11th Ave. E. and Kenwood Ave.
13—13th Ave. E. and 9th St.
14—Morgan Park.
15—Belknap St. and Tower Ave.—Superior.
16—Hunters Park.
17—57th Ave. W. and 3rd St.
21—21st St. and Grand Ave.—Superior.
24—24th Ave. E. and Superior St.
32—32nd Ave. W. and Superior St.
39—39th Ave. W. and 3rd St.
45—45th Ave. E. and Superior St.
57—57th Ave. W. and Medina St.
61—61st Ave. E. and Lester Park.
63—63rd St. and Tower Ave.—Superior.
71—71st Ave. and 3rd St.
92—92nd Ave. and 3rd St.

These numbers are carried for your convenience, to enable you to identify your car at a distance. We have endeavored to assign them so that you can memorize them with the least amount of effort.

TWIN PORTS ELECTRIC LINES

2-24-27

CITY SHAKES OFF SNOW, SOOTHES FROST BITES, AGAIN ON MOVE

per—Section of huge snow drift that extended the entire length of P oint, practically burying this section of the city. The height of the dri.. can be conceived by a comparison with the man in the photograph who is six feet tall.

Lower—Members of the street railway company crew and volunteer workers laboring to extricate the stricken Point from its smothering of snow.

Duluth has shaken the snow from its ears, limbered its frost stiffened joints and again is moving with its pre-storm alacrity.

Normal service has been resumed on all street railway lines, according to R. E. Thompson, traffic superintendent of the Duluth Street Railway company and vehicular traffic is moving with comparative ease.

Point Line in Operation.

Park Point residents, due to the snow shoveling activity of 50 street railway employes and a corps of citizen volunteers, yesterday boarded the Point line cars for the first time since the storm hit the city Wednesday. The line has been cleared to Thirty-eighth street, within five blocks of the terminus, Mr. Thompson said.

With the streets practically in trafficable condition, city and street railway officials are in wait for the battle with water that will ensue when the drifts and snow banks that have been thrown up along the sides of the streets begin to melt.

The city's street crews will be held in readiness for the first deluge from the spring freshets, Bert Farrell, commissioner of public works, said. As soon as advisable, catch basins which carry surface water to the storm sewers will be thawed out in preparation for the floods from the melting snow, he added.

With the exception of the danger to motors on street cars, street railway officials are holding little fear for the "thaw." Car motors, they said, owing to their proximity to the ground, probably will suffer several "shorts" during the flood period. It is impossible to keep a motor waterproof, it was explained, and the presence of but a small amount of water in the wiring will cause a short circuit, crippling the car it drives.

Sand washed upon the tracks by the flood streams also will cause the street railway company considerable trouble, officials said, especially on hillside lines where derailments can be expected.

Traction Company Set Back $25,000 in Snow Battle

Employes Praised for Loyalty During Period of Storm

"If old man winter had made off with five of our best cars instead of dealing us this storm the result would not have been worse financially," W. S. Byers, assistant to the general manager of the Twin Ports Electric lines, said yesterday. He estimated that with lost fares amounting to $10,000; snow shoveling at $4,000; snowplow operation at $3,000; lost time paid carmen, cost of repairing damages to equipment and other items at $8,000 that the direct cost of the storm to the company to Feb. 26, can conservatively be set at $25,000. "It may run anywhere from $30,000 to $40,000 before we get back to normal," he said.

Mr. Beyers commented on the spirit and loyalty to the service displayed by all of the employes throughout the storm. They cheerfully accepted all work assigned to them and endured long hours and exposure without complaint, he added.

Division Superintendents H. H. Brown of Duluth and A. Williams of Superior are now making up for the sleep they lost supervising the work of their snowplow crews. Roadmas-

He Directed Trolley Fray With Storm

H. H. BROWN.

Byers continued.

"The snowplow crews report many interesting incidents that o curred. I was on a plow which g into trouble with a woman on Ea field avenue for throwing snow in her bedroom window. We narrow escaped an accident at one poi where we suddenly came upon a m walking ahead of us. The operat

Duluth Herald 7-10-20

1-13-22

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BUS METHODS.

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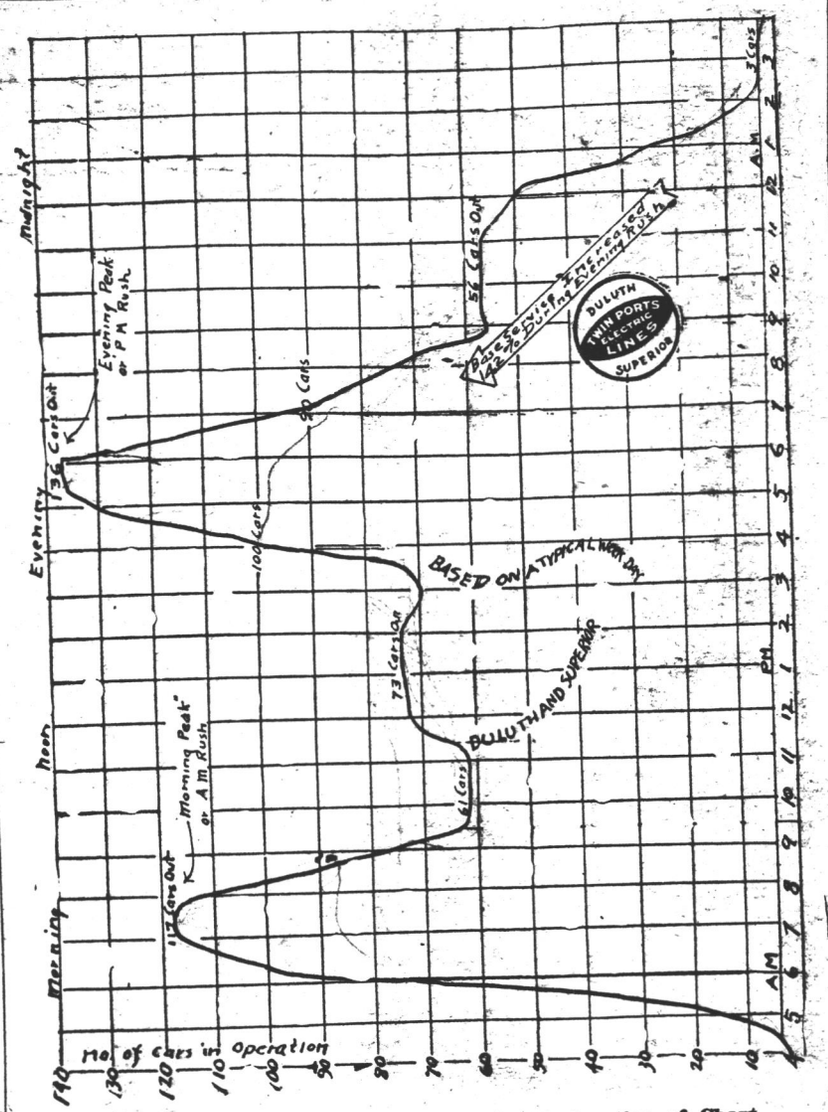
E. M. M.

12.

PUSH DEMON TRAFFIC'S FACE BACK TO NORMAL AND SOLVE STREET CAR PROBLEMS



"Quoth Traffic Demon with a grin,
'If some M. D. could shift my chin
Or fill my slanting forehead in,
And graft my extra length of nose
Within the dent my mustache shows,
There'd be a seat for everyone—
But hang the luck, it can't be done.'"

"The cost of running cars during the morning and evening rush hours is fully three times what it would be if traffic were distributed evenly over the twenty-four hours," declared R. B. Thompson, superintendent of schedules for the Duluth-Superior Traction company, who is the originator of the accompanying chart showing the number of cars in service at any time of the day. In Mr. Thompson's ryhme, quoted above, he points out the resemblance of the chart to a human face. The long "nose" and "chin" constitute a problem, the solution of which would subdue the financial problems of the street railway company. The long "chin" represents 117 cars that are put into service between 6 and 7 a. m., the time when most men are going to work. In his chart Mr. Thompson calls it the "morning peak" or "a. m. rush." The long "nose" represents 136 cars brought into service between 5 and 6:30 p. m. to carry hungry people to their evening meal. If the extra length of 'nose" and "chin" of "Demon Traffic," as the face on the chart is called, could be reduced to normal, it would not be necessary for the company to keep all the extra cars that it uses only for the two rush hours represented by the two peaks on the chart. Mr. Thompson says:

"This homely old fellow is 'Traffic Demon"—the worst "feature" in street railway operation. He is responsible for the plight of the strap-hanger and for the high cost of operation in American cities."

Explanation of Chart.

The explanation of the chart is as follows: The numbers from 4, at the base of the "chin," to 3, at the "forehead," represent the time of the day; the numbers from 10 to 140 represent the number of cars. At 4 a. m., the number of cars in service begins to increase gradually; the curve representing the cars pulling out to make the first trips from outlying section. The "chin" peak shows the morning rush. The extra cars required are useful for one trip only. They carry a load one way and then must be pulled in as they are not needed again until the evening rush. Traffic between 9:30 and 11:30 in the morning is very light; only base service cars are run. After 11:30 until shortly after 2 the number of cars in service increases to seventy-three, due partly to the people who go home for lunch and partly because of the shoppers. The increase in cars at this time is about 20 per cent. From 3:30 until after 6 the number of cars gradually increases until it reaches 136. Mr. Thompson says, "Base service must be increased 140 per cent. Most extra cars can make only one trip before the rush is over and they usually run one way with plenty of vacant seats."

Between 7 and 9 p. m, the theatergoers furnish most of the traffic. Between 9 p. m. and midnight there is just enough traffic to be handled by base service cars, together with special extras for large gatherings. The abrupt drop at the "forehead" is caused by the falling off of traffic after midnight. All base cars except the owl cars pull in at this time. It is the hope of the street railway company to change the appearance of "Demon Traffic" from a freak "face" to a normal one.

Visit the Rinks

See the kids in action!

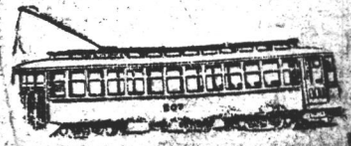
The rinks are just teeming with healthy youngsters these days.

Be one yourself! Get the old "Barney & Berrys" down out of the attic. Never mind the rust—a few times around will take care of that.

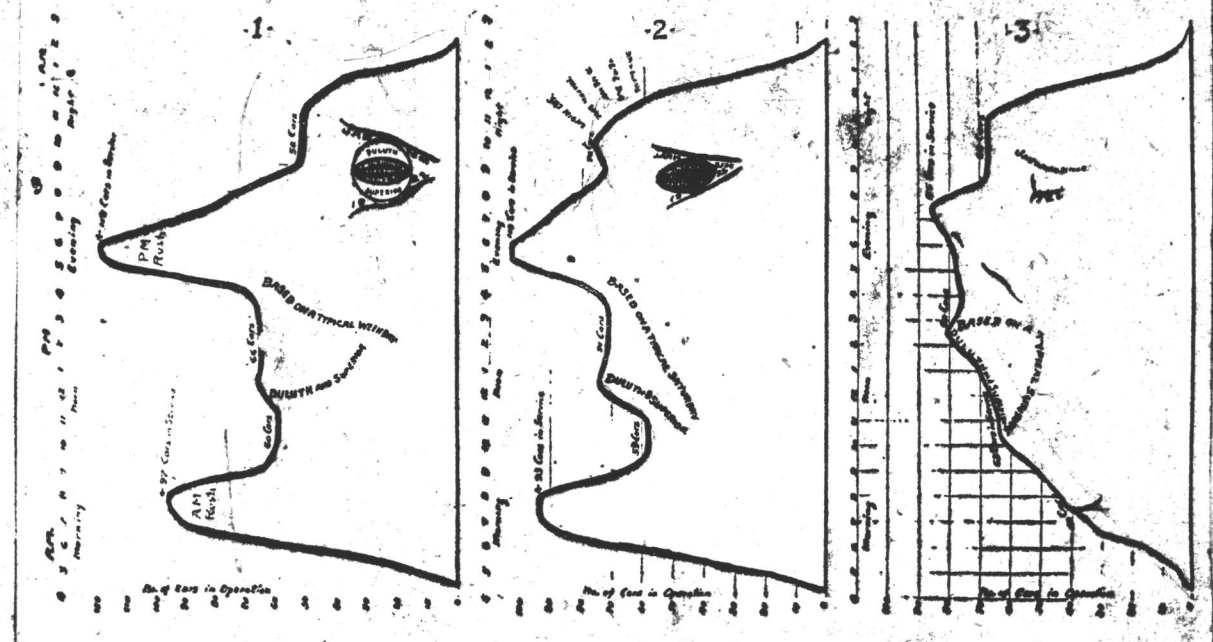
Here is a list of the principal public rinks. Pick out the nearest one—

Morgan Park.
Fortieth avenue West and Sixth street.
Thirtieth avenue West and Third street.
First avenue West and Third street.
~~Fourteenth avenue East and London road.~~
Fifteenth avenue East and Fifth street.
Forty-seventh avenue East and Superior street.

There are warming houses in which you can put on your skates and heated street cars to get there in.



Demon Traffic Is Traction Expert's Nightmare
His "Faces" Reflect Duluth Street Car Travel



"Demon Traffic" is a three-faced phantom.

He is the street railway's worst operating problem, according to R. B. Thompson, superintendent of schedules of the Twin Ports electric lines.

A glance at his "faces" quickly reveals the riding habits of street car patrons indicated by the number of cars which must be operated at all hours of the day to provide service as required.

Resemblance to the face of a human is reflected in the rhyme which "Demon Traffic" murmurs as the cars click over the rails from morn until late into the night:

"Quoth 'Traffic Demon' with a grin
If some M. D. could shift my chin
To fill my slanting forehead in,
And graft my extra length of nose
Within the dent my sharp chin shows,
There'd be a seat for everyone—
But hang the luck, it can't be done."

This Is Problem.

The long "nose" and "chin" constitute a problem the solution of which would solve the financial problems of the average street railway company, Thompson says. The long "chin" represents 97 cars which are put into service between 6 and 8 a. m. at a time when most folks are going to work. The long "nose" symbolizes 119 cars which must be operated during the evening rush to carry hungry persons home to their meals.

Here is how Thompson explains it:

'The homely old fellow pictured above in his three characteristic poses might fittingly be called 'Demon Traffic' for he is the worst 'feature' in street railway operation. He is responsible for the plight of the strap hanger and for the high cost of operation in American cities.

Rush Is Greater.

"A few years ago these 'peaks' were not so prominent and were considerably wider. The tendency of the last few years toward shorter working hours in all lines has added to the rush hour problem, making it necessary for street railways to invest large sums in equipment which can be used only for a short period each day. Out of every six cars, one is needed for only one trip each day. Almost one-half are required for morning and evening rush hour service only.

People see the cars hauling crowds away and say, 'Gee, the street railway's making money.' They are amazed when told that crowded rush hour extras operate at a heavy loss. It takes all seats filled and some 30 passengers standing to provide fares enough to pay the wages of the car crew alone, which is only about one-half the expense of running the cars. As the following jingle expresses it:

The morning rush flows into town,
The evening rush away.
One way, though empty, cars run up
Expenses that fares must pay
And half of our production thus,
Forsooth, is thrown away.

Explanation of Chart No. 1.

At 4:30 a. m. the number of cars in service begins to increase gradually as early cars pull out to make first trips from outlying sections. The "chin" peak shows the morning rush. Most of the extra cars required are useful for one trip only. They must then be pulled in as they are not needed until the evening rush. Traffic between 9 and 11 in the morning is very light and only the regular all-day cars are run. The rise at the "lips" is caused by additional cars pulling out to increase service for those who go home to lunch and for the afternoon shoppers. Beginning at 3:30 p. m. more cars are put on the lines as shoppers start homeward.

In two hours the number increases from 66 to 119 cars in service. By 7 o'clock most of the extra cars have returned to their stations. Between 7 and 9 p. m. theatergoers furnish most of the traffic. Years ago there was a sharp peak at 8 p. m. but, thanks to the movies with their continuous performances, this traffic is now spread over a wider period. After 9 p. m. there is just enough traffic to be handled by the all day cars together with special extras for large gatherings. The abrupt drop at the "forehead" is due to the falling off of traffic after midnight. Except for an occasional sleepy swain dozing in his seat after taking his girl home it is a lonesome trip for the conductors coming in from the suburbs. Before the days of prohibition late night runs were not always so uneventful.

No. 2—Saturday Curve.

On Saturdays a few less cars are needed in the morning as schools are not in session. At 11 o'clock traffic begins to increase and extra cars are required. More service than is provided on week days is necessary from noon until midnight. However, the 6 o'clock "peak" is not so sharp on Saturdays due to the stores remaining open until 9 p. m. and 16 less extra cars are required.

While "Traffic Demon" wears a rather pleasant expression on weekdays, it is apparent that the flattening out of his nose and the swelling of his forehead, caused by the spreading out of the evening rush on Saturdays and the necessity of keeping extra cars out late Saturday nights, has a bad effect on his disposition.

No. 3—Sunday Curve.

Travel on Sunday is much better distributed throughout the day. There is less one-way business and fewer cars are required. Some 30,000 passengers who rode the day before, however, fail to show up. On weekday mornings cars are almost all out by an hour after daylight. On Sundays they take 14 hours to pull out. On weekdays cars pull in gradually between 6 p. m. and midnight.

On Sundays most of them stay out until 11 p. m., the curve dropping off abruptly after that hour. The late night extra service shown on the Saturday chart seems to have a marked effect on old "Traffic Demon" as he presents a decidedly sleepy appearance on Sunday.

R. B. THOMPSON.

News Tribune
4/16/22.

BOB THOMPSON WINS FAME WITH ADS ON STREET CARS AND TRAFFIC

GAINS FAME AS AD MAN

R. B. THOMPSON.

"Bob" Thompson, superintendent of schedules for the Duluth Street Railway company, has created a great deal of favorable comment throughout advertising circles due to the clever advertisements he has written for the "street cars."

Advertisements of Local Street Car Company Are Original.

Attract Favorable Comment From Big Men in Advertising Field.

Creating Public Good Will With Clever Copy and Catchy Pictures.

When "Bob" Thompson of the Duluth Street Railway company attended a meeting of the Duluth Ad club it was a great event for the railway company. Not that anyone realized it at the time but because every member present was hard at it picking the street railway advertisements to pieces. Right then and there "Bob" decided to change those newspaper advertisements. He tells the story in the June issue of the "AERA." In fact, it is such a good story that there has been a great deal of favorable comment about it among advertising men and street railway officials the country over. Snatches of the story are given in the paragraphs that follow, just as "Bob" wrote them.

"Street railways and telephone companies are natural enemies of the public, anyway," said a friend the other day when we were discussing public relations.

General or not as this opinion may be, there is at least a decided parallel in many respects between these two utilities with their numerous representatives coming into frequent contact with the public. Both have their services always on tap and both have their rush hour problems, the difficulties of which the public has small knowledge of and scant patience with.

Both perform services for small considerations, payable in cash at once on the street car platform or at the public toll stations, the collection of which is prone to turn the minds of some patrons to real or supposed imperfections in the service. Behind them both in the minds of many looms that invisible creature, the big corporation with its ways that are supposed to be dark. Both utilities furnish a common topic of comment, second only to the weather as a waiver of introduction, whether it be a group of strangers on the street car platform or two people waiting at the public telephone booth. "SOME service!" spoken with a disgusted grunt being equivalent to "My name is Jones—pleased to meet you."

The telephone people, however, realized early that unless their patrons were given definite favorable information to think about, the great benefits conferred upon society by the development of the telephone would receive scant appreciation in the minds of the public in which exaggerated and erroneous ideas of inefficiency and exorbitant rates were allowed to take root.

Reflecting on the telephone business there runs through my mind thoughts of the remarkable achievements of the industry, its importance to the business and social life of the country, the spirit and loyalty of its trained body of courteous employes and its [illegible] customer ownership of securities.

As I search for the source of these thoughts, which are evidences of a good will toward the telephone company which has grown upon me unconsciously there comes to my mind the vague memory of an advertisement illustration. The home of a telephone lineman is pictured. The man's wife is helping him button up his coat as he prepares to sally forth into the storm and repair the break in the line. I remember the headline as it caught my eye when I turned the page—it was something About loyalty to the public service.

What the telephone people have done in this way to overcome prejudice and cultivate good will we are beginning to discover, that we can do also. Our business is just as honorable, just as essential and it is contributing just as largely to the happiness and prosperity of the public. Furthermore, it is just as interesting and we find that that makes it just as easy to tell people about it entertainingly so that they will read our message and get our viewpoint.

It is several years since our company decided to advertise. We secured the services of an advertising man and made a start which, however, was not carried very far. The arrangement did not work out quite satisfactorily, partly because in the press of other matters enough time had not been given in co-operation with him and partly because of a feeling that his lack of knowledge of the street car business limited his usefulness to us in his work. Another reason, perhaps, was the management's honest aversion to anything which suggested "propaganda."

However, we felt it advisable to continue as an advertising customer of the newspapers and, to fill our space, took the easiest way out by adopting a plan then being followed in another city of publishing a daily list of street car delays with their causes.

Because of the mystery concerning what a schedule man does with his time between changes in time tables the work of "editing" this daily list was delegated to the writer. This resulted in an arrangement which kept our space filled, satisfied the newspapers and took very little of any one's time.

Everything was lovely, except that the public wondered what it was for and occasionally somebody accused us of trying to influence the newspapers with advertising.

When the writer returned from military service he resumed his old job and incidentally the publishing of the daily delay list. Zealous membership scouts of the local Ad club enticed him into the meetings where, with ears burning, he heard references to the street car company's "patent medicine ads." As one man put it. "When only one car rider out of a hundred is affected by a delayed car why advertise the imperfection to the other ninety-nine who were satisfactorily served?"

However, this embarrassment was healthy and resulted in a determination to improve our advertising. The first thing done to relieve the monotony was to spread into two columns and add a list of articles found on the cars. This helped to silence the criticism that we had no business to advertise, but it was in no way getting our real problems before the public.

The next step was to add below the delays and lost articles each day a short paragraph or two of real publicity matter. However, this was not read, as the inclusion of unrelated subjects prevented any arrangement of the type matter within a reasonable space so as to attract attention and hold interest, it being still thought necessary to continue the delay-and-lost-article matter as an excuse for running the ad.

About eight months ago, as an experiment, we dropped the delay ads and lost articles and used the space for other matter which we change entirely with each insertion. We did this with some misgivings, but we are now well satisfied with the experiment and will continue to advertise in our present manner. Much favorable comment has been heard and not once have we been criticized for spending money for advertising which should have gone to improve the service.

There are endless opportunities to get in touch with the reading public with the presentation of each month patrons can gain some favorable impression of the company's sincerity, its efficiency, its efforts to render faithful service, its human organization and its courteous employes. As dripping water in time wears away a stone, it is reasonable to expect that the constant and regular appearance of interesting facts relative to the street railway will check the spread of prejudice and build good will when good will is deserved.

For a small company which, like ourselves, is just starting to advertise, the first year is the hardest. After that enough experience has been gained and sufficient idea-stimulating matter should be collected to make the work much easier.

We have learned that it pays to take enough time to do this work well, for the public is discriminating. It knows good and bad advertising and judges accordingly.

To return to the telephone company's advertisements—I do not think I would have noticed them if it were not for the illustrations, and if I had I might not have remembered them. The appeal of the picture is powerful. An advertisement must be read to serve its purpose. The competition for attention is keen among advertisers and the time of the reader is limited. With effective use of cuts, contrast in type and massed white space, a small advertisement will stand out where a much larger one not well arranged or illustrated finds few readers. Many people only glance at advertisements. If simple words and short sentences are used and headlines planned to make a complete impression, the message reaches the [illegible] readers.

The illustrations we use are mostly obtained free of charge from the newspapers as part of their service. Once or twice a month I drop in and select the mats which I think I can use to advantage. Merely looking over a catalog of illustrations often suggests copy which can be fitted to them.

Three or four of these advertisements can be sent to the papers at once in plenty of time to be set up carefully and proofs furnished for approval. This guards against errors and secures the best results.

I find that it is a good plan to jot down any idea for an advertisement as it comes to me, then when I have some time to spare I get it out and elaborate on it. Then I put it away to "let it cool." By the time I read it again I find that by forgetting it temporarily I view it somewhat as the average reader would and I can then improve it considerably or reject it entirely. In the meantime there is the chance of running across an appropriate illustration. In this way there is always on hand a reserve of timely copy which can be used when there is nothing in the way of announcements to make or when other matters allow no time for the writing of advertisements.

The effect of our efforts so far on the feeling of the community toward the company is, of course, difficult to measure, but while we are still getting about the same number of complaints and about the same amount of criticism, there are of late evidences of good will which were perhaps less frequent before. Favorable comment has appeared in newspaper editorials and in the public columns of the papers; one civic organization has adopted a resolution favoring the restriction of jitney busses to streets not served by car lines, another has sent in a resolution complimenting the service, invitations have been received to send speakers to discuss types of equipment, methods of handling traffic, etc., and the minister of one of our largest churches has declared his intention to comment favorably on the trolley car company in a sermon entitled "Fares, Please."

Duluth Herald advertising

Ad Club to Meet.

George M. Peterson, secretary of the Retail Merchants' association and a member of the club's vigilance committee, will speak on "Truth in Advertising" at the noon luncheon of the Duluth Advertising club at the Chamber of Commerce today. Robert Thomson, supervisor of schedules of the Duluth Street rail-

Feb. 5, 1920.

VENTILATION OF STREET CARS

—No. 1—

The season has arrived when street car patrons are particularly interested in the ventilation of the cars. Some are interested in ventilation only as it affects the temperature, while others consider the temperature a matter of secondary importance as compared to the purity of the air. With the thought that it may add to the comfort of the latter, we wish at the outset to inform them that there are two sources of bringing fresh air into our cars that are not generally known, and that can never be closed by the passenger who objects to drafts.

One consists of twenty-six oval openings in the steel side frame of the car about one inch from the floor. These openings communicate directly with the outside through twenty-six holes in the car sills, one directly under each window pocket. The air which comes through these openings passes over the heating pipes and, being warmed by them, is not recognized as "fresh air," although it comes directly from the outside.

(Continued Tomorrow.)

Feb. 6, 1920.

VENTILATION OF STREET CARS

—No. 2—

The other means of ventilation is the suction pipe of the air compressor which opens into the body of the car under one of the seats. The pump which furnishes compressed air for operating the brakes and whistle is working most of the time, although it is not usually heard except when the car is at a standstill. It pumps all the air it uses from the interior of the car, forcing an equivalent volume of fresh air to enter the car from the outside.

These two hidden means of ventilation are not sufficient to supply fresh air to all passengers in a crowded car with doors, windows and ventilators closed, but they help materially and will keep the air pure without other openings when there are only a few passengers aboard.

(Continued Tomorrow.)

Feb. 7, 1920

VENTILATION OF STREET CARS

—No. 3—

With the widely varying attitudes of different people towards fresh air it is impossible to satisfy all of our patrons all of the time, and the air in a crowded car is at best likely to seem impure by comparison with the fresh air in which the passenger has walked several blocks or waited several minutes before taking the car, and it often seems worse than it really is by reason of the variety of odors including various kinds of perfumes used by passengers.

The company endeavors to come as near as possible to pleasing all of its patrons in the matter of ventilating and in heating its cars, as well as in other features of its service, and instructions to its employes are given with that end in view. Patrons who have extreme notions, either about the temperature or purity of the air, must necessarily yield somewhat to the notions of their fellow passengers. Conductors are instructed and passengers are requested not to open the deck ventilators immediately behind the smoke-pipe from the car heater, as when these are open gas from the heater is likely to enter the car.

Mar. 25, 1920

Just Supposing

That you knew of a concern looking for a place to locate, a concern which would—

Distribute over a million dollars in wages annually,

Pay more taxes than any other local establishment,

Manufacture a first-class product, and

Sell it for less than people in hundreds of other cities have to pay—

Would you not offer it every encouragement to come here?

Your Street Railway, already established here, does all that and is now asking a fair deal to enable it to "carry on."

Feb. 13, 1920

Do a Good Turn Daily

Every day children a seen thoughtlessly coastin across street car tracks. Yo can do a good turn by warn ing them of the danger.

Many narrow escapes hav been reported this year. Hel us prevent a bad accident.

Ask a Boy Scout — he knows.

Feb. 14, 1920

CAR SERVICE

DULUTH TWIN PORTS ELECTRIC LINES SUPERIOR

Friday, February 13th

DELAYS AND INTERRUPTIONS

A disabled eastbound East Ninth street car blocked the line for 2 hours from 8:48 p. m. at Twelfth avenue east.

A wrecking car pulling in the above car delayed all westbound hill line cars 36 minutes from 10:40 p. m. on Second street.

Drifting snow and slippery rails delayed several cars 5 to 15 minutes during the evening.

Due to motor trouble the extra car on the Highland avenue line was not run.

ARTICLES FOUND ON CARS

1 box buttons	2 pr. overalls	1 cap
1 pr. mittens	1 song book	1 portfolio

Don't Dash Out and Wait!

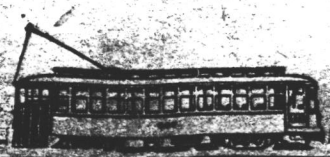
Plan your trip—spend a moment with a time card instead of 10 or 15 minutes' waiting at the corner.

Cars run on regular schedule and you will find that they are usually on time.

Avoid annoying experiences of "just missing a car."

Inquire at Third avenue west and the car starter will provide you with a copy of the pocket time table just printed.

COMPLAINTS AND SUGGESTIONS



GIVEN PROMPT COURTEOUS ATTENTION

TEACHING "CONS" AND MOTORMEN HOW TO HANDLE STREET CARS IS SOME TASK

Did you ever board a street car manned by five or six conductors and with the front vestibule all cluttered up with motormen? That is, you think they are motormen until the real motorman allows one of them to try his hand at the control handles. Then by the jerky stopping and starting of the car you know them for what they are —beginners, "rookies," breaking in.

The student car in charge of competent instructors does not run on any regular schedules but "free lances" about from line to line. In this way the men learning the work become acquainted with the various lines, at the same time becoming proficient in collecting fares or operating the car.

Andrew Olson, instructor for conductors, sees that the men in his charge learn to collect fares and issue transfers, handle bell signals to the motorman, flag railroad crossings, operate the car signs, keep track of passenger traffic passing load points, fill out daily reports and become familiar with the names of streets and avenues. He emphasizes the importance of courtesy and watchfulness to avoid accidents.

Must Be Mechanical.

S. W. Evans, instructor for motormen, also has much to teach his men. To operate a car properly requires skill which is only acquired with much practice. Each man must receive careful instruction in the mysteries of street car mechanism. They must know just "what makes the wheels go round" and know enough about electrical equipment to make minor repairs on the line when things go wrong, which is bound to happen occasionally with any kind of a machine. Student motormen must learn the running time between all points on the lines, the location of every switch, loop, wye and turnout. They must know where special care in running is necessary, where safety stops are to be made, how to operate over signal sections, operation under circuit breakers, which cars have the right of way at intersections, how to save power and never to take chances which might result in accident.

The next steps after receiving instructions on the special car is a study of the rule book. After passing a preliminary examination by Line Foreman David Wright, an old timer who knows the book by heart, the beginner is interviewed by H. H. Brown, superintendent of the Duluth division, who decides whether or not the student is qualified to take out his own car.

Tough in Winter.

"Winter conditions are hard on the new man," said Mr. Brown. "With our chief competitors, the sidewalks and the automobiles, put out of business by the cold and snow we have the fair weather walkers and the automobile owners added to our regular patrons for a few months. Then all cars carry unusually heavy loads—increasing the troubles of the new conductor. Motormen who started since last winter have a new experience ahead of them when they will have to operate through our winter blizzards. Driving snow which makes it difficult to see, frozen switches and troublesome snow drifts are all in the game and like most other occupations, 'the first hundred years are the hardest.'"

H. H. BROWN,
Superintendent.

To the "old timers" like Motorman J. P. Ryan who began to run street cars in Duluth in 1897, all of the above is very simple, but the beginner finds enough to learn to keep him mighty busy during his "breaking in" period of a week to ten days. N. Duford is another motorman with twenty years' experience. These men have traveled a distance equal to some twenty-five times around the earth. Among the conductors probably the best known is W. J. Holmes. Smiling "Bill" is noted for his courtesy and he has been very popular among street car patrons for the last nineteen years. There are at present twenty-six women conductors. Many of them have served straight through since the time during the war when the shortage of men gave them an opportunity to demonstrate their ability. These women met with public approval from the first and the company is proud of the efficient service they render.

TO RELIEVE CONGESTION

Continuation Transfers and Education to Better Traction Service.

A campaign of education to relieve crowded traffic conditions of cars to the eastern and western ends of the city during the height of the afternoon and evening rush is suggested by street car patrons as the result of the recent published announcement of the Duluth Street Railway company that "continuation transfers" will be issued good at Twenty-fourth avenue east and at Thirty-second avenue west. The purpose is to equalize loads and give a larger percentage of patrons an opportunity to use seats.

"A large number of patrons east of Twenty-fourth avenue, as well as those of West Duluth do not know that the company allows during the rush hours of the afternoon a continuation transfer to be issued from the East end car at Twenty-fourth avenue east and the West end car at Thirty-second avenue west," said Robert B. Thompsen, schedule expert of the company. "Very few are using this privilege, with the result that for a large part of the distance these cars are going light while cars to Lester Park and West Duluth are overcrowded."

The overcrowded condition of Woodland and Lester Park cars during the evening rush is attributed to the fact that these cars are also used extensively by short distance passengers living west of Twenty-fourth avenue east. The continuation transfer system, said Mr. Thompson, enables a Lester Park or Woodland resident to take cars that are going only to Twenty-fourth avenue east and getting a transfer at this point and continuing his ride on the less crowded suburban car. Similarly, Mr. Thompson said, West Duluth patrons may take a car going to Thirty-second avenue west and transfer at this point to a far less crowded West Duluth car to continue his journey home.

3-31-20.

CHILD HAS NARROW ESCAPE; MOTORMAN ALERT; NOW UNNERVED

Darting suddenly from behind an automobile parked in the center of the block at Fifth avenue east and Fourth street yesterday afternoon, a 2-year-old child started to cross the car tracks just ahead of an eastbound East Fourth street car. With quick presence of mind the motorman shut off the power, applied the brakes and dropped his fender. It all happened in a moment. The child was safely picked up on the fender just as the car stopped with a jerk.

Motorman C. H. Craven to whose quick action the child owes her life, was greatly shocked by the narrowness of the escape. It was thought advisable to give him a two days' vacation before returning to work.

The little girl is Henriette Potswald, daughter of Charles F. Potswald of 628 East Fourth street.

R. H. Wellington, claim agent for the company, says that the child's brother, Eugene Potswald, was killed in a similar accident with a street car in 1913. Mr. Wellington is intensely interested in accident prevention and in discussing this narrow escape said:

"Nothing is so distressing to the employes and officials of a street railway company as an accident in which anybody, especially a child, is injured by one of its cars. The safety of not only its passengers, but the public in general, is always the first consideration. Every motorman is selected because of his special fitness for the work of operating a car. He is taught that the safety of the public must be considered

12-3-20.

SWITCH STREET CARS BY "JUICE"

At Third avenue west and Superior street an old institution has given place to modern mechanism. Armed with a switchrod and dodging the traffic some 500 time a day, the Third avenue switchman has long been a familiar sight. Between trips to the switch to separate hill cars from main line cars, street car patrons usually kept him busy giving information about the time of cars, lost articles, transfers, stopping places, destination of cars, etc.

Now in the interest of economy, an automatic device throws the switch and the car starter must find time to direct strangers and answer questions. The electric switchman now on duty does not need to dodge passing vehicles, takes no room on the street, works without experiencing discomfort in rain or snow and promptly clicks the switch into place without the necessity of stopping cars.

Many people have watched this mysterious mechanism operate, but few understand how it is controlled. T. A. Armstrong, roadmaster for the Duluth Street Railway company, explains its operation as follows:

"The electric switch is operated by electro-magnets placed beneath the surface of the street and protected by cast iron boxes. These magnets are connected by a rod and lever to the tongue of the switch, the "push" or "pull" of the magnet being determined by the direction of the flow of the current of electricity passing through it.

"The line conductor on the overhead trolley wire is connected by wires, through mechanism in a pole box, with the underground magnet. This mechanism is so devised that when a trolley wheel takes current through the controller (manipulated by the motor man) to the car motor, the current supplied to the magnet throws the switch for the curve.

"When the trolley wheel passes under the line contactor, without taking current—when the motor man's controller is 'off'—the magnet attracts the switch to the main line and the car goes straight ahead instead of taking the curve.

"In other words, the motor man, keeping the current 'on,' directs his car to the curve, and cutting the current 'off' keeps to the straight track."

4.54c

when operator Angus Hurlbut pulled car #301 into the temporary service facility at Hill and Belknap Streets at 1:10 a.m. June 24. The five remaining 300-series cars were then taken to the Duluth car barn via the Soo Line Rwy. for a few more years of spasmodic service (see also 4.53).

d. TROLLEY BUS ABANDONMENTS

All trolley bus operations ceased May 15, 1957 after 25 years 7 months 11 days of continuous operation. At the time of termination there were trolley bus routes on Superior/Michigan Sts. from 61st Ave. E. to the company garage at 27th Ave. W.; on 24th Ave. E., E. 4th St., Wallace and Woodland Aves. to Austin St.; on Piedmont Ave.; on 21st Ave. W. and on W. 3rd. St./Grand Ave. to 64th Ave. W.

(NOTE. Please see 4.24 for bus service that replaced most rail line abandonments).

4.546 DSR began replacing street-side wood trolley poles with steel poles along W. 3rd ST.- Grand Ave. Nover r 1, 1938 in preparation for conversion to trolley bus double o head trolley wires. (see 5.58).

Car #248 with Bert Lodgaard as operator, had left Austin St. (WOODLAND line) at 1:15 a.m. Vernon Anderson, then head of the schedule department of DSR, and Jim Kreuzberger were the last remaining passengers as the car pulled into the 27th Ave. W. yard at 2:05 a.m. July 9, 1939. Rowdy souvenir hunters followed the car

4.546 into the yard. Thus ended rail operations on the contiguous portion of DSR's once great street railway system.

4.546 Pat Hughes, who had been an operator/engineer and INCLINE/HIGHLAND godfather for 26 years, was operator of the last upbound INCLINE trip at 5:35 p.m. Labor Day, September 4, 1939, connecting at 8th St. with HIGHLAND AVE. car #255, which departed promptly with Jim Sholund as operator for a round trip to Duluth Heights, returning to the car barn at 6:04 (see also 2.8).

4.546 Thus ended all rail operations in Duluth and Superior, 56 years after the first horse cars began operating, and 49 years after the first electric cars began running on Duluth streets.

Tracks 4,

~~St~~ car tracks were the blood ~~vessels~~ veins of st car operations. ~~DSR~~ Duluth & Superior had extensive, complex, ~~and, of so, often~~ compatible ~~operatio~~ rail operations; ~~horse car~~ narrow gauge horse car tracks, inclines, bridges

It is difficult to ~~realize~~ fathom the primitive nature of DSRs first 4 years of st. car operations; mule cars operating on n g track.

Strike of 1912

In September, 1912 a few of the employes of Duluth Street Railway pany formed a union and on September 9, 1912 they induced the remaining employes of the company to go out on strike which eventually involved the employes in Superior as well as in Duluth. This strike was accompanied by a considerable amount of disorder and violence and was not officially called off until November 6, 1912. The loss in passenger revenue from curtailment of service on account of the strike was estimated at $75,031.31 and direct expense of the strike, aside from the loss in revenue, amounted to an additional $78,094.61. Including loss in revenue, direct expense and estimated damage to property, and accidents due to use of new employes, this strike cost the company anywhere between $175,000 and $200,000.

Jitney Invasion

On March 14, 1915 the first jitney bus appeared on the streets of Duluth. The snow had all disappeared early that spring and the streets were in good condition for automobile traffic. The number of jitneys rapidly increased until there were over 150 in operation in competition with street car lines by midsummer. The loss in passenger revenue from this jitney competition during the year 1915 was estimated at $150,000. The jitneys practically ceased operation when snow came, but resumed in the spring of 1916, although in less numbers than in 1915. At one time in 1916 it was estimated that they were taking about $1,000 in passenger revenue per week from the street cars, but by August, 1916 this had dropped to about $500 per week. In March, 1917 a few jitneys again appeared and in April and May, 1917 they were estimated to be taking $150 to $200 per week in receipts from the street cars, but the patronage of the jitneys did not get above an estimate of $200 per week during the summer of 1917 and in October and November dropped to about $75 per week. A couple of jitneys appeared on the streets in the spring of 1918, but the "jitney craze" was practically over in Duluth after the fall of 1917. These jitneys operated principally between 26th Avenue West and 15th Avenue East on Superior Street taking the "short haul" or"cream" of the street rail traffic where the pavement was good. During the summer of 1915 there were no restrictions whatever on jitneys and they ran whenever they liked and where they pleased, but the city eventually passed an ordinance requiring them to furnish bonds and this together with the wearing off of the novelty and the realization of the jitney owners that they could not profitably carry passengers at 5 cents caused the jitneys to disappear in Duluth. It has been estimated that the jitney invasion cost the company in loss of revenue about $200,000; $150,000 in 1915, $40,000 in 1916 and $10,000 in 1917.

4546 All rail service in Duluth ended July 8, 1939 (~~[illegible]~~).

4.6

The ~~Flu~~ "Spanish" Flu epidemic prompted a DSR public announcement on November 9, 1918 limiting passengers on its cars to 85.

4.2 11-1-23

First front-exit cars

Removed turnstiles

" front platform

hot water heaters

Installed under-floor

hot-air heater system

4.7 On September 22, 1998, DSR began the installation of ~~treadleplate~~ rear door exit treadle plates on one-man cars.

4.11

On May 27, 1920 DSR began the installation of ~~fare boxes PAYE~~ pay-as-you-enter (PAYE) devices on its cars: fare box, turnstiles. Turnstiles were not well liked, and were eliminated on Sep. 23, 1923

On February 4, 1921 DSR began use of metal tokens. ~~10 for 25¢~~ ?

?

1-1-28 6¢ fare; ~~1¢~~ One 5¢ ticket with 1¢ cash for one token

Operations

4.17 As early as October 1898, DSR carried U.S. mail ~~from 5th Ave. W.~~ on its cars from 5th Ave. W. to West Duluth, Lakeside, and Hunters Park. Cars carrying mail bore signs "US MAIL." To what extent and for what period of time this service was offered is not known.

~~3-26~~ 6 RAIL LINE MILEAG / Assigned ??

DATE	Rail Line ~~track~~ Miles	Passenger Cars	Remarks
1889	4.22 ng	18 horse cars	178 horses
10-1890	19.40	12 s. truck electric cars	
~~1900~~ 1895	30.60	66 "	
1900	74.80	96	" includes Superior
1915	83.76	128	" "
1920	104.28	77	37
1929	113.6		highest track mileage
~~1930~~			
1938-39	60.52		track mileage
1925	109.73	123D 27S	at end of rail operation
1930	112.47	121D 27S	
1935	65.98	91D 25S	Abandonment of ~~Superior~~, East End, Piedmont & all Superior rail lines

OPERATIONS

12-1-09

Operation of 4-wheel "Dinkies ended

Began to install air brakes March 1903.

~~1923~~ Horses replaced mules 6 3 1890

The first operation of new double truck cars

Record passengers carried:

a Monday 6 24 1902 55,000 fares

3 ~~[illegible]~~ Chronology of Operations start-up dates, luth

4.12 HORSE CAR/~~LINES~~ NARROW GAUGE LINES

1883 July 6 8th Ave. W. to 3rd Ave. E.

1884 June to 11th Ave. W

1885 to Garfield Ave

1886 Spring to 13th Ave. E

to 18th Ave. W., to Superior St.,

to 20th Ave. W.

1887 Oct to 23rd Ave. W

1889 May to 22nd Ave. E.

Nov to 28th Ave. W.

1894 12-21 temporary Interstate trestle

1896 7-1 from 13th Ave. W. & Michigan St. NW to Superior St. at 14th Ave. W., to Piedmont Ave. to W. 3rd St. to 37th Ave. W.

1896 12-1 same as 1894 trestle

1897 9-1 First DSR Car across D-S Bridge

1898 4-23 Re-Start-up on Park Point

6-10-01

SECTION 5

CHRONOLOGICAL HISTORY OF EQUIPMENT

4-10-90 Nov 22 1882 First car arrived in Duluth from St Paul Street RR Co. 6,000 lbs

1 July 6 1883 First mule-car operation in Duluth...on Superior St, 3rd Ave E to 8th Ave W , narrow gauge, single track

4-14-06 Apr 14 1886 Purchase of 50 mules and 12 new cars in Twin Cities

-08 May 12 1888 48 mules and 3 new cars purchased
-28

3-17-08 1890 (40) Doubtful mule-cars in service at time of conversion to electric operation — Nov 8 1890 — DSR records show 18

~~Apr 10 1890 Sept 1~~

3-17-08 1890 First electric cars were 22 converted mule cars (Doubtful!)

-31 Apr 6 1891 4 summer cars arrived 91, 92, 93, 94 for Woodland

12 Dec 30 1892 37 cars in operation in Duluth

-32 June 29 1892 34-foot summer car for Highland line (~~#43 ?~~) ~~95~~ ~~43~~ 95

Nov 23 1892 Citizens committee petitioned for winter protection for motormen

-33 Jan 31 1893 35 cars, 240 men

-33 May 27 1893 Arrival of trucks for 30 new cars

-33 June 1 1893 Conversion of trailer #2 (#92) to motorized summer car for Interstate line — trailer use

July 31 1893 Double-truck car in operation on Highland line 95?

-33 July 15 1893 First vestibule car (see also 11/19/96)

July 18 1893 Color destination signs and color lights

Sept 17 1893 Car #30 went into Canal (see also 9/28/13)

Dec 22 1893 Use of sleigh at Conner's Point (see also 12/22/13)

Nov 16 1894 Car #34 burned at Woodland barn fire

Dec 3 1894 ~~Dual gauge operation on Superior portion of Interstate line~~ Temporary trestle bridge across the bay SRT

Nov
Oct 4 1895 Notes on vestibuled cars (legal deadline 11/1/95

Oct 29 1895 Superior equipment notes; first vestibuled cars (see also 10/4)

Nov 19 1896 Additional vestibuled cars
Feb 20 1897 Headlites and color lights
Nov 20 1896 Car #42 rebuilt into private car St Louis (see also 11/12, 10/11, 10/29/95)
Jan 20 1897 First fenders (see also 3/23)
Jan 24 1898 New fenders installed (see also 3/23/97)
Sep 20 1898 First standard gauge cars for Superior
June 20 1899 Rebuilding of cars into single-end
" " 1899 Early plans for double-truck cars
Nov 9 1899 Description of winterizing

July 26 1899 Colors of Superior cars

Nov 22 1900 Use of trailers in Superior
Nov 5 1900 Description of D-T cars
May 2 1900 Use of passenger car #56 for work service
Aug 27 1900 Plans for purchase of first D-T cars
Jan 3 1901 Arrival of first double-truck cars..#151-162

Mar 29 1901 #61 accident: 40th Ave E and Superior St

Apr 12 1901 Rebuilding of Superior East End cars

June 2 1901 First double-truck cars on Interstate line. Full base service with double-truck cars June 4.

May 24 1901 Trial run of new double-truck cars

Oct 31 1901 Double-truck cars placed in service on Lakeside line

May 29 1902 Color of Duluth work car (#51 ?)

Aug 15 1902 Sprinkler car see 8/16/22

Jan 19 1903 New roof signs on Interstate cars

Feb 27 1903 Colored transparent ~~roll~~ signs

Mar 9 1903 Air brakes and whistles installed on double-truck cars (see also 12/2/03)

Apr 7 1903 St Cloud bought 5 used DSR cars: 33,36,105,108,109

May 6 1903 Funeral car considered

Trailers from Superior

Oct 20 1903 Work car St Peter

Jan 22 1904 Description of second batch of double-truck cars...#163-177
Mar 4 1904 " " " " " " "

July 4 1904 108 Cars in service

Feb 1 1905 Editorial on new double-truck cars

Apr 17 1907 Third batch of double-truck cars; steel underframes...#183-197

Oct 9 1909 Unsuccessful attempt to put lever-operated gates on single-truck cars (see also 5/20)

Dec 1 1909 Base service with double-truck cars

5-16-10 June 11 1910 St Cloud bought 4 more used DSR cars: 69,71,76,77

Sep 3 1910 Funeral car considered

Sep 28 1910 Aberdeen bought used DSR cars: 113,115,119,120,125,126,129;
also bought 116,127 on 5/25/11 see also 9/27/10

Aug 12 1911 For sale: single-truck cars

Jan 16 1913 Arrival of 255 for Highland line
July 4 1914 Car #80 wrecked, destroyed on 21st St
July 13 1915 DSR work cars used to haul rock to W D & Lakeside

Mar 17-19 1917 Cars crippled by heavy snow

DT cars in Du. on (EE) some time between 1903-1909

Sep 1 1917 Park Point equipment acquired

Sep 15 1917 Coal hauling considered (see also 11/21)

Sep 21 1917 #264 destroyed at Hill St crossing in accident

Dec 18 1917 Description of plow #4/146

Dec 20 1917 6 cars, #279-284, leased from TCRT, 4 their 900s, 2 their 1600s; returned to TCRT on 10/27/20

Feb 11 1918 Disposition of #42 St Louis ?? (see also 8/21/29)

July 18 1918 DST policy on use of trailers

Oct 19 1918 Role of cars during great fire

Jan 4 1919 U S Fleet Corp cars #289-294, TCRT 1200s. Became property of DSR in 1921 (see also 12/7/19)

Sep 29 1919 #298-300 placed in service on Park Point

Oct 2 1919 #295-297 not wanted in Superior (Billings Park line)

Dec 7 1919 Shortage of cars in Duluth. 153 cars in service

Dec 19 1919 Use of work cars for hauling crushed rock from 32nd AW tipple

Jan 8 1920 Use of route numbers (see also 9/6/19)

Feb 14 1920 #295-297 not wanted on East Ninth, Kenwood lines

May 27 1920 First PAYE cars

Dec 3 1920 Description of controller fire (see also 12/17/26)

July 14 1921 Use of 2-car trains on ~~Park Point~~ Lake Ave.

Oct 13 1921 Use of trolley coach in Minneapolis

Feb 22-Mar 4 1922 Description of snow storm problems

-38 Sep 23 1923 Final use of turnstiles

Nov 1923 7 single-truck cars scrapped in Superior, leaving only 2 (52, 57), in Duluth

Nov 2 1923 Use of front exit cars: ~~#268-278~~ #269-274, 276-278

Sep 29 1924 First one-man cars, used on Billings Park-Broadway line: #163, 165, 166

Jan 19 1925 Description of #52, 57

Apr 21 1925 #301-305 placed in service in Superior

Jan 7 1927 #169 wrecked on 21st St Superior

Feb 15 1927 Wild ride of #52-57

Mar 1928 Ice roller built 170-173 ~~#170-173~~ ~~#170-173~~

Apr 1 1928 First use of one-man cars in Duluth (see also 6/2 and 9/22)

May 21 1928 1 car withdrawn from Highland service for "several weeks" for overhaul

Jan 6 1931 Sale of car bodies

Oct 4 1931 Trolley buses #1,2 on Lester Park line

Oct 6 1934 #163 converted for use on Crosley line

Nov 3 1937 Sale of car bodies; 65 in four years

July 9 1939 #248 last car to operate into barn: 2:30 a.m.

Sep 4 1939 Last Incline and Highland line trip: 5:35 p.m.

Aug 1939 #268 sold to DM&IRR

2-28-26 street railways in U.S.

5-27-28 "first U.S. trolley line: Neenah, Appleton, Kaukauna

7-25-37 Eau Claire: 4th trolley line in U.S. torn up

11-12-37 Green Bay goes bus: Milw, Racine, LaCrosse remain

	In Shop	Finished
163	16 May 24	26 Aug 24
165	Same	Same
166	20 Jun 24	28 Aug 24
164	26 Jun 25	24 Aug 25
167	Same	Same
168	16 Nov 26	29 Jan 26
169	Same	30 Jan 26*
177	10 Mar 26	26 Jun 26
170	10 Jan 28	18 Feb 28
171	Same	Same
172	21 Jan 28	20 Mar 28
173	Same	Same
174	18 Feb 28	10 Apr 28
175	Same	Same
176	20 Mar 28	3 May 28
178	Same	Same
179	10 Apr 28	31 May 28
180	Same	2 Jun 28
215	5 Jul 28	2 Sep 28
219	Same	Same
213	26 Jul 28	9 Sep 28
216	Same	Same
244	3 Sep 28	18 Oct 28
210	7 Sep 28	Same
211	30 Sep 28	13 Nov 28
212	Same	Same
217	18 Oct 28	17 Dec 28
218	Same	Same
241	17 Dec 28	13 Feb 29
234	2 JAN 29	Same
223	Same	10 Mar 29
252	12 Jan 29	14 Mar 29
245	13 Feb 29	30 Mar 29
237	Same	2 Apr 29
250	10 Mar 29	20 Apr 29
247	15 Mar 29	Same
254	30 Mar 29	15 May 29

242	In Shop	Finished
226249	2 Apr 29	15 May 29
226	23 Apr 29	12 Jun 29
232	Same	Same
231	15 May 29	3 Jul 29
243	Same	5 Jul 29
248	12 Jun 29	25 Jul 29
251	Same	Same
253	5 Jul 29	23 Aug 29
239	6 Jul 29	Same
229	25 Jul 29	16 Sep 29
265	Same	Same
242	23 Aug 29	8 Oct 29
246	24 Aug 29	Same
225	17 Sep 29	31 Oct 29
208	Same	Same
238	8 Oct 29	7 Dec 29
224	Same	Same
228	31 Oct 29	28 Dec 29
230	Same	Same
227	7 Dec 29	31 Jan 30
268	SAME	Same
266	9 Jan 30	22 Feb 30
240	16 Jan 30	Same
203	3 Feb 30	20 Mar 30
204	Same	Same
200	22 Feb 30	12 Apr 30
202	Same	Same
201	20 Mar 30	6 May 30
206	Same	Same
198	14 Apr 30	29 May 30
199	21 Apr 30	Same
209	6 May 30	27 Jun 30
236	Same	Same
207	6 Jun 30	31 Jul 30
214	9 Jan 30	Same
205	27 Jun 30	30 Aug 30

* Wrecked 6 Jan 27 Same Data for 214.as shown. Believed in error.

Here is listing of the one man conversion tables as of 1935. Hope these will be of some aid to you. Write me if you have any questions on where trolleys ran for your other list. I have reasonbble complete files of Street Railway Investments, Poor's Manuals and the McGraw Hill Directories and can answer most of your questions.

Floyd

WORK PAPER – (Lined)
FORM PT–9906 (3–1–64)

Apr 1912 Sold to Duluth Machinery Co. cars 44, 45, 48, 54, 55, 56, 58

May 1912 " " " car 60

Jun 1912 " " " cars 132, 133

July 1912 " " " Cars 77, 81, 83, 84

Aug 1912 " " " cars 68, 70, 86, 112, 130, 134, 135

Jan 16 1913 Arrival of cars 255, 256 from TCL for HIGHLAND line

May 1913 Car 136 wrecked / burned

~~May~~ ~~1915~~

May 1915 Cars 39, 41 sold to Duluth Belt Line

1915 Car 62 converted to double-end supply car & transferred to Superior Div

July 13 1915 DST work cars used to haul rock for City street projects

Mar 17-19 1917 Cars crippled by heavy snow

DSR Disposition Dates

1893

9-17 Wrecked : 30 Trucks & Motors to 92 (early 1894?)

1894

11-16 Destroyed in Woodland Carhouse fire : 34

1899

5-?? Sold to Interstate Traction Co. : 63-66

1900

5-?? Sold to Interstate Traction Co. : 93-94

1902

6-?? Sold to Interstate Traction Co. : 91-92

1903

4-7 Sold to St. Cloud St. Ry : 33, 36, 105, 108, 109

1904

?-? Sold for Scrap : 95 Trucks & Motors to Iowa Car 1907
11-?? Sold to Grand Forks Transit Co. : 19, 102

1906

5-31 Sold to Interstate Traction Co : 110, 117, 122 (letter dated 5-31. Invoice dated 6-30.)
6-30 Sold to Duluth Belt Line Ry : 25, 28

1907

10-2 Sold to J. M. Madden 26, 27

1909

12-?? Wrecked on 3rd St. 87. Unserviceable as of 5-1-10 so apparently not scrapped until after 5-1-10

Between 3-3-1900 and 5-1-1910

Destroyed by Fire : 31 Motors to 88
Destroyed (Scrapped?) : 32, 35, 37, 89-90
Burned at Incline : 23 (1901 Pavilion fire?)
Wrecked & Destroyed : 111, 128
Burned : 124
Sold to Aberdeen Ry : 46 (early 1910)

DSR Disposition Dates

Between 3-3-1900 and 5-1-1910

Sold to S. J. Jones: 20
J. J. O'Bryan: 22
J. A. Ferguson: 24
W. E. Mc Ewen: 29, 38
Normal School: 101
Lakeside Club: 104, 107
J. Gibson: 106
Otto Erickson: 118

Given to D. E. Moore: 21
E. Holgren: 99
W. D Draper: 100
M. Hanson: 103

1910

6-11 Sold to Granite City Ry.: 69, 71, 76, 77
8-19 Burned & Destroyed: 114
9-1 Sold to Aberdeen Ry.: 115
9-16 Burned & Destroyed: 74
10-1 Sold to Aberdeen Ry: 113, 119, 120, 125, 126, 129
~~10-5 Sold to Interstate Traction Co.: 122~~ (DSR 9-18 Plate III is wrong)
10-5 Sold to Edw. Swenson: 121, 123

1911

1-29 Burned at Highland: 43
5-25 Sold to Aberdeen Ry: 116, 127
9-11 Given to Mrs. Florence Lee: 78

1912

Before 5-1 Sold to Duluth Iron & Metal Co.: 44-45 (Duluth Machinery Co. 9-18 Poster)
5-11 Sold to Duluth Machinery Co.: 60
6-25 : 132, 133
7-18 : 81, 83, 84
7-23 : 48, 54, 55, 56, 72
8-29 : 58, 68, 70, 86, 112, 130, 134, 135

1913

1-25 Sold to Olaf Peterson: 40
5-1 Wrecked and Burned: 136

DSR Disposition Dates

1914

7-9 Wrecked on 21st St. Viaduct: 80

1915

5-7 Sold to Duluth Belt Line Ry: 39, 41

1917

4-?? Scrapped: 85
7-?? Scrapped: 49, 50, 61

1918

5-15: Scrapped: 42 "ST. LOUIS"

1919

5-16 Rebuilt to PAYE Double End: 57
6-22 " " " " : 52

1920

9-10 Rebuilt to Supply Car: 131

1923

8-?? Scrapped: 47, 51, 79.
11-16 Sold to West End Scrap Iron & Metal Co.: 53, 59, 62, 73, 75
11-16 Body sold to A. Jacquin; trucks & motors sold to West Iron Scrap Iron & Metal Co.: 82

1931

Scrapped: 52, 57, 131.

~~5-20~~ 1933

4-20 Scrapped 67

1935

88

~~96~~ 1939-40

96, 97

August 5, 1997

Jim,

Many thanks for the recent information you sent me. In return enclosed is the report of building/rebuilding/disposition dates. The DSR disposition date must be wrong on 198. They have 5-35 but 198 is included on that 11-13-36 equipment data memorandum. So I have used 5-39 as the disposition date.

The DSR cars that had the sliding motorman's door on the front platform were the Class L-8 cars, 242-254 and 257-278. Leased TCRT cars 279 and 284 also had the sliding motorman's cab door.

Enclosed is a photocopy of the DSR construction costs per car. I did not include the cost of fare boxes, coasting recorders and turnstiles. I included one page of TCRT construction costs per car for comparison. A sheet is included with DSR/TCRT car numbers as indicated on the equipment data sheets. One of the reasons for carbody cost variations on the TCRT page is that some of the cars had been rebuilt with front exit doors by this date. The TCRT car costs do not include fare boxes and coasting recorders. (They did not use turnstiles.)

Thanks for all your help with these projects. I don't know how useful this information will be, but I have always had the urge to compile and print it.

Russ

DSR Car #	Date Built	TCRT Car #	Date Sold	Rebuilt Frt.Exit	Rebuilt One-Man	Rebuilt Dbl.End	Disposition
151	8/9-1900	I 833	1901				BS 5-31
152	8/9-1900	I 834	1901				BS 4-31
153	8/9-1900	I 835	1901				BS 5-31
154	8/9-1900	I 836	1901				BS 3-31
155	8/9-1900	I 837	1901				BS 5-31
156	8/9-1900	I 838	1901				BS 4-31
157	8/9-1900	I 839	1901				BS 5-31
158	8/9-1900	I 840	1901				BS 5-31
159	8/9-1900	I 841	1901				BS 5-31
160	8/9-1900	I 842	1901				BS 5-31
161	8/9-1900	I 843	1901				BS 3-31
162	8/9-1900	I 844	1901				BS 4-31
63	11-??-01						BS ?-11
163	4-??-04				8-26-24	10-8-34	DB ?-39
164	4-29-04				8-24-25		BS 10-37
165	4-30-04				8-26-24		BS 11-37
166	5-01-04				8-28-24		BS 7-38
167	5-02-04				8-24-25		BS 11-37
168	5-10-04				1-29-26		BS 2-38
169	5-12-04				1-30-26		AD 1-6-27
170	5-15-04				2-18-28		BS 5-39
171	5-16-04				2-18-28		DB ?-39
172	5-20-04				3-20-28		BS 3-39
173	5-30-04				3-20-28		BS 5-39
174	6-10-04				4-10-28		BS 3-39
175	6-15-04				4-10-28		BS 3-39
176	6-??-04				5-03-28		BS 4-39
177	6-30-04				6-26-26		BS 2-38
178	2-13-05	I1043	2-23-05		5-03-28		BS 6-39
179	6-15-05	1111	8-24-05		5-31-28		BS 4-39
180	6-06-05	1108	6-16-06		6-02-28		BS 5-39
181	6-08-05	1109	6-16-06				BS 6-35
182	6-10-05	1110	6-16-06				BS 4-35
183	9-03-06						BS 6-35
184	9-05-06						DB ?-35
185	9-07-06						BS 5-35
186	9-09-06						BS 8-35
187	9-11-06						BS 10-35
188	9-13-06						DB ?-35
189	9-15-06						BS 6-35
190	9-17-06						BS 7-35
191	9-11-06						BS 6-35
192	9-15-06						BS 9-35
193	9-17-06						BS 6-35
194	11-02-06						BS 5-35
195	11-04-06						BS 6-35
196	11-10-06						BS 6-35
197	11-15-06						BS 5-35

DSR Car #	Date Built	TCRT Car #	Date Sold	Rebuilt Frt.Exit	Rebuilt One-Man	Rebuilt Dbl.End	Disposition	
198	3-10-08				5-29-30		BS 5-39	
199	3-10-08				5-29-30		BS 5-39	
200	3-16-08				4-12-30		BS 5-39	
201	3-27-08				5-06-30		BS 6-39	
202	4-10-08				4-12-30		BS 7-39	
203	5-10-08				3-20-30		BS 6-39	
204	6-09-09				3-20-30		BS 8-39	
205	6-09-09				8-30-30		BS 7-39	
206	6-09-09				5-06-30		BS 6-40	
207	6-10-09				7-31-30		BS 6-39	
208	6-11-09				10-31-29		BS 8-39	
209	6-14-09				6-27-30		BS 7-39	
210	6-15-09				10-18-28		BS 11-40	
211	6-16-09				11-13-28		BS 6-39	
212	6-18-09				11-13-28		BS 7-39	
213	6-21-09				9-09-28		BS 7-40	
214	6-23-09				7-31-30		BS 8-40	
215	5-26-10				9-02-28		BS 8-39	
216	5-28-10				9-09-28		BS 9-39	
217	6-03-10				12-17-28		BS 9-40	
218	6-04-10				12-17-28		BS 4-39	
219	6-06-10				9-02-28		DB 11-40	
220	3-15-11						SS 9-39	W.E. I&M Co.
221	3-15-11						SS 9-39	W.E. I&M Co.
222	5-23-11						BS 5-36	
223	5-25-11				3-10-29		BS 6-40	
224	5-31-11				12-07-29		BS 8-39	
225	6-02-11				10-31-29		BS 9-39	
226	6-06-11				6-12-29		BS 6-40	
227	6-08-11				1-31-30		BS 7-40	
228	6-09-11				12-28-29		BS 2-40	
229	6-10-11				9-16-29		BS 2-40	
230	6-15-11				12-28-29		BS 4-39	
231	6-17-11				7-03-29		BS 6-40	
232	6-19-11				6-12-29		BS 9-39	
233	6-20-11						BS 6-36	
234	6-21-11				2-13-29		BS 1-39	
235	6-23-11						BS 4-36	
236	6-24-11				6-27-30		BS 7-39	
237	6-24-11				4-02-29		BS 6-39	
238	2-16-11	I1482	6-28-11		12-07-29		BS 9-40	
239	2-18-11	I1483	6-28-11		8-23-29		BS 4-40	
240	2-18-11	I1484	6-28-11		2-22-30		BS 11-40	
241	2-18-11	I1485	6-29-11		2-13-29		BS 4-39	
242	5-24-12				10-08-29		BS 8-40	
243	5-27-12				7-05-29		BS 12-39	
244	5-28-12				10-18-28		BS 4-40	

DSR Car #	Date Built	TCRT Car #	Date Sold	Rebuilt Frt.Exit	Rebuilt One-Man	Rebuilt Dbl.End	Disposition	
245	8-02-12				3-30-29		BS 7-39	
246	8-04-12				10-08-29		BS 2-40	
247	8-06-12				4-20-29		BS 8-40	
248	8-07-12				7-25-29		DB 1939	
249	8-09-12				5-15-29		BS 6-40	
250	8-11-12				4-20-29		BS 7-39	
251	8-11-12				7-25-29		BS 6-40	
252	8-11-12	I1564	11-13-12		3-14-29		BS 7-39	
253	8-12-12	I1565	11-13-12		8-23-29		BS 9-40	
254	8-26-12	I1566	11-13-12		5-15-29		BS 10-39	
255	2-02-01	868	12-19-12			12-19-12	DB 1939	
256	5-28-01	869	12-19-12			12-19-12	DB 1939	
257	9-24-14						BS 3-36	
258	9-24-14						BS 4-36	
259	9-24-14						BS 3-36	
260	9-24-14						BS 4-36	
261	9-24-14						BS 10-35	
262	9-24-14						BS 6-36	
263	12-18-15	I1789	5-13-16				BS 3-36	
264	12-18-15	I1790	5-13-16				AD 9-21-17	
265	12-18-15	I1791	5-13-16		9-16-29		BS 9-39	
266	12-18-15	I1792	5-13-16		2-22-30		BS 8-39	
267	12-08-14	I1724	7-27-16				BS 6-36	
268	11-30-14	I1719	7-27-16	11-23	1-31-30		CS 6-39	DM&IR RR
269	11-25-14	I1716	7-27-16	11-23			BS 5-35	
270	12-05-14	I1722	7-27-16	11-23			BS 10-34	
271	6-01-17			10-23			BS 9-35	
272	6-01-17			11-23			BS 6-35	
273	5-21-17			10-23			BS 8-35	
274	5-21-17			10-23			BS 5-35	
275	6-01-17						BS 6-35	
276	6-01-17			10-23			BS 10-35	
277	6-01-17			11-23			BS 8-35	
278	6-01-17			11-23			BS 8-35	
279-284 were TCRT 1672,988-991,1673 leased from 12-24-17 to 10-19-20.								
285-288 were Park Point Traction Co. 10-11,20-21 acquired 9-1-17.							BS 7-31 (285-87)	
							BS 6-31 (288)	
289	12-04-06	1202	10-20-18				BS 6-36	
290	12-03-06	1204	10-20-18				BS 7-36	
291	11-23-06	1212	10-20-18				BS 7-36	
292	3-08-07	1231	10-20-18				BS 7-36	
293	3-08-07	1232	10-20-18				BS 6-36	
294	3-15-07	1234	10-20-18				BS 7-36	

DSR Car #	Date Built	TCRT Car #	Date Sold	Rebuilt Frt.Exit	Rebuilt One-Man	Rebuilt Dbl.End	Disposition
Single Truck Birney Cars built by American Car Co.:							
295	9-19						BS 4-38
296	9-19						BS 3-38
297	9-19						DB 1938
298	9-19						BS 10-38
299	9-19						BS 10-38
300	9-19						BS 11-38
Lightweight Cars built by Lightweight Noiseless Electric Street Car Co.:							
301	4-25						BS 4-38
302	4-25						BS 4-38
303	4-25						BS 3-38
304	4-25						BS 6-38
305	4-25						BS 6-38
Single Truck Closed Cars built by LaClede Car Co.; Rebuilt Double End by DSR:							
52	5/7-92					6-22-19	BS 7-31
57	5/7-92					5-16-19	BS 7-31
Snow Plow built by TCRT:							
4/146	11-10-17						DB 1940

Abbreviations used:

BS	Body Sold
DB	Dismantled and Burned
AD	Accident Damage (Destroyed in Wreck)
SS	Sold for Scrap
CS	Car Sold Complete

National® Brand 45-606 Eye-Ease® 45-306 2 - Pack Made in USA

Duluth Ht. Ry.
Duluth Division Original Cost per Car
1-1-26 A. L. Drum & Co.

	Initials	Date
Prepared By		
Approved By		

	Car Nos	Specifications as of 7-1921		2 Body	3 Trucks	4 air Brake Equipment	5 Electrical Equipment	6 Total
1	151 - 162	Brill 01/67/K6/AA1		298350	68850	31442	22440	623042
2								
3	189 - 197	BLW1/70/K28B/CP21		335478	8160	29912	22440	671990
4								
5	198 - 203	TC5/213/K37A/CP21		328032	85680	29911	235620	679243
6								
7	204 - 214	TC5/213/K37A/CP21		328236	92820	29911	235620	686587
8								
9	215	TC6/213/K37A/CP21		328236	9180	29912	235620	685568
10								
11	222	TC8/67/K37/CP21	}					
12	223-240	TC8/216/K37/CP21	}	328236	88740	29912	234371	681259
13	241	TC8/70/K37/CP21	}					
14								
15	242 - 254	TC8/216/K37/CP27		328236	88740	27362	235620	679958
16								
17	255 - 256	TC8/67/2K6/AA1 (air)		285090	82620	32462	242862	643034
18								
19	257-262 267-278	TC9/200/K43F2/CP25		328236	84660	24912	215220	652028
20								
21	265 266	TC5/216/K43F2/CP25 TC5/70/K43F2/CP25	}	328236	92820	24912	230010	675878
22								
23	285 - 286	SL47/26E67/2K10/AA1		26520	7140	32462	121890	490052
24	287 - 288	BJ761/26E67/2K10/AA4		26520	74970	28586	121890	490646
25								
26	289 - 294	TC9/200/K43F2/CP21		335478	84660	29912	215220	665270
27								
28	295 - 297	B78M1/26E25BC/K63B/CP25C2		12750	2550	23970	11220	289170
29	298 - 300	B78M1/26E25BC/2K63B/CP25C2		12750	2550	25296	14280	321096
30								
31	52 & 57	MCB/25AB30/2K2/Hand		16320	2040	—	118220	301920
32								
33	220-221	TC/special/none/none/CP21		"Lee Account 5304"				
34								
35								
36								
37								
38								
39								
40								

National® Brand 45-606 Eye-Ease® 45-306 2 - Pack Made in USA

Duluth St. Ry.

Superior Division Original Cost per Car

1-1-27 A. L. Drum & Co.

	Initials	Date
Prepared By		
Approved By		

Car No's.	Specifications	1	2 Body	3 Trucks	4 Air Brake Equipment	5 Electrical Equipment	6 Total
163 - 166	B04/70/K35JJ/CP27 CP21	163 164-66	3380 —	750 —	293 —	2244 —	6667 —
167 - 169	B04/70/K35JJ/CP21		3380 —	750 —	299 —	2244 —	6673 —
175 - 176	B04/70/K28B/AA1		3380 —	750 —	314 —	2244 —	6688 —
178 - 179	B04/70/K28B/AA2		3080 —	750 —	314 —	2244 —	6388 —
180, 182	BLW/70/K28B/AA2 AA1	180 182	3080 —	877 —	314 —	2244 —	6515 —
185	BLW/70/K35JJ/AA1		3450 —	877 —	314 —	2244 —	6885 —
186 - 188	BLW/70/K35JJ/CP21		3450 —	877 —	299 —	2244 —	6870 —
202	BLW/213/K37A/CP25C6	These duplicate Duluth Div 1-1-26					
209	} } } }		3380 —	877 —	248 —	2356 —	6861 —
211-212	} } } }						
216 - 219	BLW/213/K37A/CP21		3380 —	877 —	299 —	2356 —	6912 —
263	BLW/213/K43F2/CP25		3380 —	877 —	248 —	2356 —	6861 —
301 - 305	TC12/258K/Reb. K28/CP25C6		6514 —	1630 —	618 —	2977 —	11739 —

NOTE: NOT included in either Division are 170-174, 177, 181, and 183-184; apparently due to a change in Division assignment between 1-1-26 and 1-1-27

SUMMARY

CAR NUMBER	QTY	YEAR IN SERVICE	WEIGHT	TRUCKS	WHEEL BASE	MOTORS	H.P. EA.	H.P. CONT.	GEAR RATIO	AIR COMP
52-57	2	1892	18,000	McGuire	7' 6"	SRG 30	15	K2	14:67	-
151-162	12	1901	44,140	Brill 01	5' 8"	GE 67	38	K6	15:67	AA1
163-177	15	1904	49,200	Brill 04	5' 8"	GE 70	40	K28A	15:71	AA1
178	1	1905	49,220	Bald. #1	6' 0"	GE 70	40	K28B	15:71	AA2
179-182	4	1906	49,220	Bald. #1	6' 0"	GE 70	40	K28B	15:71	AA2
183-197	15	1907	51,520	Bald. #5	6' 0"	GE 70	40	K28B	15:71	CP-21
198-203	6	1908	47,900	Bald. #5	6' 0"	GE 213	50	K37A	15:71	CP-21
204-214	11	1909	47,900	TCRT #5	6' 0"	GE 213	50	K37A	15:71	CP-21
215-219	5	1910	46,200	TCRT #6	6' 0"	GE 213	50	K37A	17:69	CP-21
222-237	16	1911	46,200	TCRT #6	6' 0"	GE 216	50	K37C	17:69	CP-27
238-241	4	1911	46,200	TCRT #6	6' 0"	GE 216	50	K37A	17:69	CP-27
242-254	13	1912	43,700	TCRT #8	6' 0"	GE 216	50	K37C	17:69	CP-27
255-256	2	1913	40,200	Twin City	5' 0"	GE 67	38	K6	15:67	AA1
257-262	6	1914	41,700	TCRT #9	5' 6"	GE 200	40	K43F2	15:66	CP-25
263	1	1916	41,700	TCRT #5	6' 0"	GE 213	50	K43F2	15:71	CP-25
264-265	2	1916	41,700	TCRT #6	6' 0"	GE 216	50	K43F2	17:69	CP-25
266	1	1916	41,700	Bald. #5	6' 0"	GE 70	40	K43F2	15:71	CP-25
267-278	12	1916-17	41,700	TCRT #9	5' 6"	GE 200	40	K43F2	15:66	CP-25
285-286	2	1905	40,600	StL. #47	4' 6"	GE 67	38	K10	15:69	AA1
287-288	2	1911	36,600	Brill27G1	4' 6"	GE 67	38	K10	15:69	AA4
289-294	6	1918	45,240	TCRT #9	5' 6"	GE 200	40	K43F2	15:66	CP-21
295-297	3	1919	13,300	Brill78M1	8' 0"	GE 258C	25	K63B	13:74	CP-25
298-300	3	1919	13,900	Brill78M1	8' 0"	GE 258C	25	K63B	13:74	CP-25
301-305	5	1925	24,200	TCRT #12	4' 6"	GE 258K	25	K28	15:72	CP-25

DSA	TCRT
163-177	992-1037
178-182	1088-1107
183-197	1196-1220
198-203	1291-1309
204-214	1310-1359
215-219	1380-1429
222-241	1430-1479

▶ 242 starts Class L-8 (sliding motorman's door):

242-254, 257-278

Leased 279, 284

National® Brand 45-606 Eye-Ease® 45-306 2 - Pack Made in USA

TCRT

Passenger Equipment
Original Cost Per Car
1-1-22

	Initials	Date
Prepared By		
Approved By		

	1		2	3	4	5	6	
	Car No's.	Equipment	Body	Trucks	Air Brake Equipment	Electrical Equipment	Total Cost	
1	1235-40	BLW5-70-K28B CF21C	273025	73683	24823	194473	566004	1
2	1241-45	" " "	274472	74759	24806	195143	569180	2
3	1246-54	" " "	279055	74759	24823	194473	573110	3
4	1255-56 1258-59	BLW4-216-K43F2	294482	91683	26026	WINTER 240204	WINTER 652395	4
5	1257	BLW4-73-C6	294482	91683	26026	445067	857258	5
6	1260	" " "	295920	91683	26026	463955	876146	6
7	1261-65	" " "	295920	91683	26026	395271	807402	7
8	1266-75	BLW5-70-K28B	262528	74759	26026	195008	558321	8
9	1276-86	" " "	258278	74759	26026	195008	554071	9
10	1287	BLW5-216-K28B	255770	74757	26083	240206	596816	10
11	1288	" " -K37						11
12	1289	" " -213-	258556	74702	26083	259125	618466	12
13	1290	" " "	261960	74759	26026	259125	621870	13
14	1291-95	BLW5-213-K37A	240696	73683	26026	277808	618213	14
15	1296-1309	" " "	240522	73683	26026	277808	618039	15
16	1310	TC5-213-K37A	266307	70063	26026	277940	640336	16
17	1311-34	" " "	264860	70063	26026	277940	638889	17
18	1335-59	" " "	233914	70063	26026	275433	605436	18
19	1360-70	" " -K37	241115	72188	26026	267318	606647	19
20	1371-75	BLW4-216-K37	241115	91683	26026	248397	607221	20
21	1376-79	TC5-216-K37	241115	72188	26026	248397	587726	21
22	1380-87	TC6-216-K37	221787	72629	26026	258422	578864	22
23	1388-1404	" " "	220933	72629	26026	258422	578010	23
24	1405-21	" " "	221333	71330	26715	256447	575825	24
25	1422-24	" " " AA6	221333	71330	26120	256447	575230	25
26	1425-27	" " "	235947	71330	26120	256249	589646	26
27	1428-40	" " "	235947	72867	26120	256249	591183	27
28	1441-49	" " "	234902	72867	26120	256249	590138	28
29	1450-52	" " "	225114	77229	26120	251489	579952	29
30	1453-74 1476-79	" " "	224810	77229	26120	251489	579648	30
31	1475	TC5-216-K37						31
32	1480-81	TC8-216-K37	224810	74598	26120	251489	577017	32
33	1482-96	TC8-216-K37C CF27C	232842	74598	23294	257846	588580	33
34	1497-1506	" " "	232842	76031	24422	245132	578427	34
35	1507-16	" " "	226959	76031	24422	252117	579529	35
	1517-29	" " "	226959	76031	23294	252117	578401	36
37	1530	TC9-200-K37C	226959	69286	23294	182905	502444	37
38	1531	TC8-216-K37C	226959	76031	23294	252117	578401	38
39	1532-52	" " "	222126	76031	23294	252523	573974	39
40	1554	" " " CP25	222126	76031	21214	252523	571894	40

FC = Flat car 6-19-97 6.

Identification of Trucks in Photos on ER of M Pages 404-408

Page 404

early SP #1 Brill 27-A1 Brill 27-A2 FC #1 originally

First rebuild DSR FC #1 Twin City Work Car FC #1 second rebuild

Page 405

1912 DSR FC #2

1915 Twin City Work Car FC #2

Page 406

1916 Brill 27-A2 SP #2

later DSR TC TC Bemis original

Page 407

SP #3 Twin City #8 Twin City Work Car FC #3

FC #3 Twin City Work Car Twin City Work Car FC #3

Page 408

Wrecker Twin City Work Car Twin City Work Car Wrecker

FC #5 McGuire Baldwin #3 / Baldwin #4

SP #4 Baldwin #3 were purchased with 6E 87 (60H) motors. modified to accept 6E 73 (75H) motors and re-designated Baldwin #4.

~~Thew~~

~~Thew Electric Shovel Co 56,000# controller CE1100 Rheostat motors 1 GE CVC 116 20hp~~

4" and 7" trolley wheels

Electric tail lites 1911

Single hinged door (on front exit cars) ~~between~~ partition separating motormans cab and front step passageway

~~5.10 – 5.28~~

~~19 Oct '96~~ 5.60

Note	Class	DSR	*TCRT	Built	DSR rec'd/ in service
1	B3	151-162	1st 833-44	~~7~~ Aug-Oct 1900 ~~to Apr 1901~~	1-01 4-01
3	D7	163-177	(? ~~952~~ 992 -1037)	May-Sep 1903	1-04 4-04
4	E4	178	1st 1043	Feb-~~Mar~~ 1905	3-05
5	E4	179-182	1108-1111	~~Apr~~-Jun 1905	7-06
6	G6	183-197	(~~1146~~ 1196 -1220)	~~May~~ Sep Nov - ~~Dec~~ 1906	4,7,8-07
	I1	198-203	(1291-1309)	Mar-May 1908	4,5,6-08
7	K2	204-214	(1360-1379)	~~Jan-Sep~~ June 1909	7-09
	K8	215-219	(1380-~~1429~~ 29)	~~Jan-Dec~~ Apr-July 1910	6-10
	KD8	222-237	(1430-1479)	May-Jun 1911	6-11
Austen Pg 394 9	K-8	~~L8~~	238-241 1st ? 1482-1485	~~Jan~~-Feb 1911	7-11
	L8	242-251		May-Aug 1912	7,8-12
10	L8	252-254	1st 1564-1566	11-13-1912 ~~Apr 1913~~	10-12
11	C3	255-256	868-869	not replaced by TCL May ~~Feb~~ Sep 1901	1-13
	L8	257-262		Sep 1914	9-14
12	L8	263-266	1st 1789-1792	~~Dec~~-Dec 1915	5-16
13	L8	267-270	1st 1724, 19, 16, 22	~~Oct~~ Nov 1914 ~~Feb 1915~~	8-14
	L8	271-278		May 1917	5,6-17
14	D7-L8	279-284	988-991 1672-1673 leased 1917-20	Apr-Jun 1904 Dec 1913-Feb 1914	12-17
15	G6-H6	289-294		Dec 1906-Mar 1907	

* May I have the TCRT number for each DSR car?

JJK 10-96

RUSSELL L. OLSON
8212 Sheridan Ave. So.
Bloomington, Minn. 55431-1646

June 13, 1997

Jim,

Enclosed is the latest version of the Trucks, Motors and Controllers analysis. I eventually realized my original approach, by groups of cars as built, was causing me confusion. I switched to a chronological basis by individual cars, and then worked this back into the as-built groups. I hope I didn't miss any-thing; some of the DSR plates were difficult to work with due to lack of specific truck manufacturers and model numbers, and the manner in which ditto marks were used. I realize this is a subject in which you may not be interested but if you should find differences and mistakes, I would like to know about them. I did not spend any time on counting controller quantities by model number to determine car numbers involved in transfers. I might get interested in that for a later project.

MTM volunteers have not placed trolley wire in the repair shop additions. DSR 78 is stored at the rear addition without access to trolley wire. The Park Board is going to shut down all their activities at Lake Harriet July 28th for a massive reconstruction project. The latest word is that DSR 78 will not be operated this season because of these two factors. So I'm unable to offer operation of DSR 78 this season unless MTM changes its decision.

Russ

DULUTH ST. RY.

CHANGING TRUCKS, MOTORS AND CONTROLLERS

INTRODUCTION

Twin City Rapid Transit Co. over the years engaged in extensive upgrading and changing the electrical and mechanical equipment between groups of cars as well as individual cars. After completing a more wide-ranging study of such TCRT activities, I began to wonder what Duluth St. Ry. may have done since they were managed by TCRT officials.

Jim Kreuzberger supplied me with copies of DSR Mechanical Dept. equipment inventories dated in

September,1918 (referred to as 9-18),
January,1924 (referred to as 1-24) (November, 1923 was identical, produced just after the last original single truck passenger cars except 52 and 57 had been removed from service and retired),
May,1928 (referred to as 5-28),
February,1930 (referred to as 2-30),
October,1932 (referred to as 10-32), and
July,1935 (referred to as 7-35).

In addition there were Motor Lists dated in November,1930 and November,1936. A lengthy analysis of these plates and lists resulted in the attached two reports, one in chronological order, the other by groups of cars as built. Comments based on these reports and other information are next presented.

COMMENTS

Photographs indicate that on DSR cars, Brill 01 and Brill 04 trucks were all Brill 27-A2. On TCRT Brill 01 trucks were Brill 27-A2 while Brill 04 trucks were Brill 27-E2.

TCRT Mechanical Dept. record cards for DSR 215-219 list them with G.E. 216 motors, but all DSR Mechanical Dept. records list them with G.E. 213 motors.

TCRT construction journals record a shipment in December, 1907, to DSR of one set of Baldwin #3 trucks with G.E. 87 motors (60 h.p. each). The only mention of this in DSR records does not occur until October,1932, when the truck designation on Snow Plow 4/146 was changed to Baldwin #3 from Baldwin #4. (The July,1935 record also shows Baldwin #3.) On TCRT, almost all Baldwin #4 trucks were Baldwin #3 modified to accept G. E. 73 motors (75 h.p. each), and after 1911-1912 the #3 designation disappears, being replaced by #4.

Early photographs of Work Flats 1/64 and 2/65 show them with a truck design that I associate with the term DSR Trucks. When these two cars subsequently received Twin City Work Car trucks, photographs indicate one set of DSR trucks was installed on Tower Car 1/67. I don't know if DSR shops in those early years had the capability of manufacturing such trucks. As apparently only two DSR service cars originally had these trucks it would suggest they were purchased from an outside truck manufacturer. Twin City Work Car trucks are also always referred to as DSR trucks in DSR records. I don't know if DSR purchased these trucks from TCRT or could have manufactured them from TCRT plans. On TCRT, Twin City Work Car trucks had outside hung brakes and were used on service cars built from 1904 thru 1907. On TCRT, Twin City #7 trucks

were identical to Twin City Work Car trucks except for having inside hung brakes and were used on service cars built from 1911 thru 1914. Based on photographs it appears that all such trucks on DSR had outside hung brakes regardless of dates.

In the attached two reports I have used the same system of abbreviations I used in the TCRT study. Illustrative examples for explanation follow.

Brill27A2/4GE70/K28B means two Brill 27-A2 trucks, 4 General Electric 70 motors, and one K-28-B controller.

BLW5/4GE213/K-37-A means two Baldwin Locomotive Works (Baldwin) #5 trucks, four General Electric 213 motors, and one K-37-A controller.

TC9/4GE200/K43F2 means two Twin City #9 trucks, four General Electric 200 motors, and one K-43-F2 controller.

TCWC/4GE70/2K28A means two Twin City Work Car trucks, four General Electric 70 motors, and two K-28-A controllers.

Since Brill 01 and 04 trucks were identical I have used the actual Brill model designation for all Brill trucks.

Unfortunately DSR records mostly did not distinguish between Baldwin #1 and Baldwin #5 trucks, or between Baldwin #5 and Twin City #5 trucks, or between Twin City #6 and Twin City #8 trucks. And too often Twin City trucks were referred to as Baldwin trucks.

Baldwin #1 trucks had outside hung brakes and were used only on cars 178-182. (See photo of TCRT 1051 on page 304.)

Baldwin #5 and Twin City #5 trucks were identical (page 292), one purchased and the other shop-built. (The wide split pull rod is shown in photos on pages 293 and 298.)

Twin City #6 and Twin City #8 were apparently nearly identical as TCRT had one assembly drawing for both types. The only exterior means of identification was the nose on the equalizer bars, short on the #6 truck (as in the photo on page 397; I now believe the photo caption is incorrect and this is a Twin City #6 truck), and long on the #8 (same as on Twin City #9 or #9RB, photo page 293).

In the two reports, the abbreviated dates refer to the dates of the DSR Mechanical Dept. inventories as noted foregoing. Many changes probably took place between these dates. At each date reference I have noted only the equipment that actually changed between dates.

It appears that controllers were rarely changed. Upgrading by the purchase of new or used controllers seems to be the major effort, with the replaced passenger car controllers mostly transferred to service cars. Trucks and motors were apparently changed as a unit, for example Baldwin #5 trucks with G.E. 70 motors replacing Brill 27-A2 trucks with G.E. 70 motors, with the existing controllers remaining on the cars.

It appears that the disposition date in ERofM page 414 of 1935 for car 198 is incorrect in that this car does appear on the November,1936 Motor List. The correct disposition date is probably 1939.

DULUTH ST. RY.
TRUCKS, MOTORS AND CONTROLLERS
CHANGES IN CHRONOLOGICAL SEQUENCE

1911

1/64 4GE67 from retired Incline Car 63.

11-1917

2GE67 from 285 were added to 286. 285 got 2GE67 from DSR Spare Equipment.

12-1917

222 Trucks and Motors exchanged with Snow Plow 2/66:
222 Brill27A2/4GE67;
2/66 TC6/4GE216.

241 Trucks and Motors exchanged with Snow Plow 1/139:
241 Brill27A2/4GE70;
1/139 TC6/4GE216

248 Trucks and Motors exchanged with Snow Plow 3/140:
248 Brill27A2/4GE70;
1/140 TC8/4GE216.

10-1918/7-1919

289-294 received with BLW5/4GE70/K28B. "Exchanged" 7-1919 with new TC9/4GE200/K43F2 shipped by TCRT 5-1919.

10-1920

Exchange of trucks and motors on leased cars from TCRT being returned:

164	Brill27A2/4GE70 from 248,
197	TC9/4GE216 from 279(1672),
248	TC9/4GE216 from 284(1673),
279(1672)	BLW5/4GE70 from 197,
284(1673)	BLW5/4GE70 from 164 (when did 164 receive BLW5/4GE70?).

1-1921

Received 8 extra GE70 motors (from returned 1672-1673?).

11-1923/1-1924

Controller changes:

2 cars	152,154	K28B (were K6 and K28A);
1 car	175	K28B (was K28A);
10 cars	184-188,190-194	K35JJ (were K28B);
2 cars	195-196	K43F2 (were K28B);

1 car 197 K37C (was K28B);
1 car 228 K37A (was K37C).
3 Snow Plows 1/139,2/66,3/140 2K35HH each.

Truck and Motor changes:
197 BLW5/4GE70 from 266;
248 TC6/4GE216 from 265;
265 TC9/4GE216 from 248;
266 TC9/4GE216 from 197.

222 Brill27A2/4GE70 (was Brill27A2/4GE67 from Snow Plow 2/66);
233,235 TC9/4GE200 from ? (were TC6/4GE216);
241 TC6/4GE216 from ? (was Brill27A2/4GE70 from Snow Plow 1/139);
255-256 Brill27A2/4GE67 from ? (Twin City trucks scrapped?).

Spare Equipment consisted of one set each of Brill27A2/GE67, BLW5/GE70, TC6/GE216 and TC9/GE200.

5-1928

Controller changes:
151-162 K35JJ (were K6 and K28B);
163-168,170-180 K35JJ (were K28A and K28B).

Truck and Motor changes:
179 Brill27A2/4GE70 from 222;
222 BLW1/4GE70 from 179.

12-1929

Two motors from each of 156-157,160,162, were placed on 285,287,288.
151,155-157,159-162 got K-28 with 2 each of their K35JJ to 285-288.

2-1930

170-176,179 BLW5/4GE70 from 183-185,190-194;
183-185,190-194 Brill27A2/4GE70 from 170-176,179.

10-1932

163-168,170-180,263 (18) TC9/4GE200 from 233,257-262,267,269-278 (18).
233,257-259,262,275,277 (7) Brill27A2/4GE70 from 163-168,177 (7).
260-261,267,269-274,276,278 (11) BLW1/4GE70 from 178,180 and BLW5/4GE70 from 170-176,179 (10). (Off 1 car.)
TC5/4GE213 from 263 to spare equipment? (What happened to one set of Brill27A2/4GE67 (11-30) and one set of Brill27A2/4GE70 (10-32) spare equipment?)

After 2-1935

240,244 BLW5orTC5/4GE213.
268 TC6/4GE216.

5-1937

255-256 TC9/4GE200/2K35JJ.

After 11-1936

198-200,212,244-245 TC9/4GE200.

DULUTH ST. RY.
TRUCKS, MOTORS AND CONTROLLERS

PASSENGER CARS

151-162 8/10-00 Brill27A2/4GE67/K6.
Data Sheet: some cars K28A.
1-24: 152,154 K28B.
5-28: all K35JJ.
12-29: two motors from each of 156-157,160,162 were placed on 285,287,288. 151,155-157,159-162 got K28 with 2 each of their K35JJ to 285-288.

163-177 4/6-04 Brill27A2/4GE70/K28A.
10-20: 164 Brill27A2/4GE70 from 248; BLW5/4GE70 to 284(1673); no reference to when 164 got BLW5/4GE70.
1-24: 175 K28B.
Rebuilt One-Man 1924: 163,165,166. 1925: 164,167. 1925-26: 168,169. 1926: 177 1928: 170-176.
169 wrecked 1-27.
5-28: 163-168,170-177 K35JJ.
2-30: 170-176 BLW5/4GE70, see Note 1.
10-32: 163-168,170-177 TC9/4GE200, see Note 2.

178 (1043) 2-05 BLW1/4GE70/K28B. Sold to DSR 2-05.
Rebuilt One-Man 1928.
5-28: K35JJ.
10-32: TC9/4GE200, see Note 2.

179-182 (1108-1111) 6-05 BLW1/4GE70/K28B. Sold to DSR 8-05(179) and 6-06 (180-182).
Rebuilt One-Man 1928: 179-180.
5-28: 179 Brill27A2/4GE70 from 222; 179,180 K35JJ.
2-30: 179 BLW5/4GE70, see Note 1.
10-32: 179-180 TC9/4GE200, see Note 2.

183-197 9/11-06 BLW5/4GE70/K28B.
10-20: 197 TC9/4GE216 from 279(1672); BLW5/4GE70 to 279(1672).
1-24: 197 BLW5/4GE70 from 266. 184-188,190-194 K35JJ, 195-196 K43F2, and 197 K37C.
2-30: 183-185,190-194 Brill27A2/4GE70, see Note 1.
10-32: 189 K35JJ.

198-203 3/5-08 BLW5/4GE213/K37A.
Rebuilt One-Man 1930.
After 11-36: 198-200 TC9/4GE200.

204-214 6-09 TC5/4GE213/K37A.
Rebuilt One-Man 1928: 210-213 1929: 208 1930: 204-207,209,214.
After 11-36: 212 TC9/4GE200.

215-219 5/6-10 TC6/4GE213/K37.
Rebuilt One-Man 1928.

222-237 5/6-11 TC6/4GE216/K37C.
12-17: 222 Brill27A2/4GE67 from Snow Plow 2/66; TC6/4GE216 to 2/66.
1-24: 222 Brill27A2/4GE70; 233,235 TC9/4GE200. 228 K37A.
5-28: 222 BLW1/4GE70 from 179.
Rebuilt One-Man 1929: 223-226,228-232,234,237. 1930: 227,236.
10-32: 233 Brill27A2/4GE70, see Note 2.

238-241 (1482-1485) 2-11 TC6/4GE216/K37A Sold to DSR 6-11.
12-17: 241 Brill27A1/4GE70 from Snow Plow 1/139; TC6/4GE216 to 1/139.
1-24: 241 TC6/4GE216.
Rebuilt One-Man 1929: 238-239,241. 1930: 240.
After 2-35: 240 BLW5orTC5/4GE213.

242-251 5/8-12 TC8/4GE216/K37C.
12-17: 248 Brill27A2/4GE70 from Snow Plow 3/140; TC8/4GE216 to 3/140.
10-20: 248 TC9/4GE216 from 284(1673); Brill27A2/4GE70 to 164.
1-24: 248 TC6/4GE216 from 265.
Rebuilt One-Man 1928: 244. 1929: 242-243,245-251.
After 2-35: 244 BLW5orTC5/4GE213.
After 11-36: 244-245 TC9/4GE200.

252-254 (1564-1566) 8-12 TC8/4GE216/K37C. Sold to DSR 11-12.
Rebuilt One-Man 1929.

255-256 (868-869) 2/5-01 Rebuilt Dbl. End by TCRT and sold to DSR 12-12.
Twin City/4GE67/2K-6 (also as of 9-18).
1-24: Brill27A2/4GE67/2K-6.
5-37: TC9/4GE200/2K35JJ.

257-262 9-14 TC9/4GE200/K43F2.
10-32: 257-259,262 Brill27A2/4GE70; 260-261 BLW1or5/4GE70, see Note 2.

263-266 (1789-1792) 12-15 TC9/4GE200/K43F2. Sold to DSR 5-16.
Data Sheet, "these cars use extra trucks and motors":
263 TC5/4GE213. 264-265 TC6/4GE216. 266 BLW5/4GE70.
264 wrecked 9-17.
1-24: 265-266 TC9/4GE216 from 197 and 248.
Rebuilt One-Man 1929: 265. 1930: 266.
2-30: 265-266 TC6/4GE216. (clerical error? TC9/4GE216?)
10-32: 263 TC9/4GE200, see Note 2.

267-270 (1724,1719,1716,1722) 11/12-14 TC9/4GE200/K43F2. Sold to DSR 7-16.
Rebuilt Front Exit 1923: 268-270.
Rebuilt One-Man 1930: 268.
10-32: 267,269,270 BLW5/4GE70, see Note 2.
After 2-35: 268 TC6/4GE216. (Photo as DM&IR W56: 1 TC6 and 1 TC9.)

271-278 5/6-17 TC9/4GE200/K43F2.
Rebuilt Front Exit 1923: 271-274,276-278.
10-32: 275,277 Brill27A2/4GE70; 271-274,276,278 BLW5/4GE70; see Note 2.

279-284 were TCRT 1672,988-991,1673 leased from 12-17 to 10-20.
280-283 Brill04/4GE70/K-28.
279,284 TC9/4GE216/K37C.
10-20: 279,284 BLW5/4GE70 from 197 and 164, before return to TCRT.

285-288 ex Park Point Traction Co. 10-11,20-21 acquired 9-17.
285-286 St.Louis47/2GE67/2K10. 287-288 Brill27G1/2GE67/2K10.
11-17: 2GE67 from 285 to 286: 286 4GE67/2K28B.
(285 2GE67 replaced from DSR equipment.)
1920: all converted to one-man operation.
12-29: 285,287-288 received GE67 removed from 156,157,160,162 as well as 2K35JJ (8 total) from 151,155-157,159-162 so that 285-288 each were 4GE67/2K35JJ.

289-294 (1202,1204,1212 11/12-06; 1231,1232,1234 3-07). Sold to DSR 10-18.
TCRT Record Cards: BLW5/4GE70/K28B.
5-19: received TC9/4GE200/K43F2 from TCRT. Installed ("exchanged") 7-19 on 289-294.

Note 1

2-30: exchange involving 8 cars.
170-176,179: BLW5/4GE70 from 183-185,190-194;
183-185,190-194: Brill27A2/4GE70 from 170-176,179.

Note 2

10-32: exchange involving 18 cars.
163-168,170-180,263: TC9/4GE200 from 233,257-262,267,269-278.
233,257-259,262,275,277: Brill27A2/4GE70 from 163-168,177.
260-261,267,269-274,276,278: BLW1/4GE70 from 178,180 and BLW5/4GE70 from 170-176,179.
TC5/4GE213 from 263 to spare equipment?
(What happened to spare equipment: Brill27A2/4GE67, Brill27A2/4GE70?)

SPARE TRUCKS AND MOTORS

1-21: received 8 extra GE70 motors (from returned TCRT 1672-1673?).

1-24: 1 set each of Brill27A2/GE67, BLW5/GE70, TC6/GE216 and TC9/GE200.

5-28: 1 set each of Brill27A2/GE70, BLW5/GE70, TC6/GE216 and TC9/GE200.
1 set of Brill27A2 with 1 GE 67 motor.

2-30: 1 set each of Brill27A2/GE70, BLW5/GE70, TC6/GE216 and TC9/GE200.
1 set of Brill27A2 with 3 GE67 motors. Same at 11-30 except that the Brill27A2/GE67 set was complete.

10-32: 1 set each of BLW5/GE70, TC6/GE213 (see Note 2: TC5/GE213?), TC6/GE216 and TC9/GE200.

2-35: None listed.

DOUBLE TRUCK SERVICE CARS

1/139 Snow Plow
- 1898: Brill27A1/4WH49/2K12.
- 1902: Brill27A2/4GE67/2K28A. (Brill27A2 in 2-04 SRJ photograph.)
- 19??: Brill27A2/4GE70.
- 12-17: TC6/4GE216 from 241.
- 1-24: 2K35HH.

2/66 Snow Plow
- 1903: Brill27A2/4GE67/2K6.
- 12-17: TC6/4GE216 from 222.
- 1-24: 2K35HH.

3/140 Snow Plow
- 1906: Brill27A2/4GE67/2K28B.
- 19??: Brill27A2/4GE70.
- 12-17: TC8/4GE216 from 248.
- 1-24: 2K35HH.

4/146 Snow Plow
- 11-17: BLW4/4GE73E/C6K.
- 10-32: BLW3. (TCRT 12-07 shipped 1 set BLW3/4GE87 to DSR.)

1/64 Work Flat
- 1901: Brill27A2/?/?.
- 19??: DSR/?/2K6.
- 1911: TCWC/4GE67 from 63.

2/65 Work Flat
- 1902: DSR/?/?. (DSR trucks in photograph dated 1-12.)
- 19??: TCWC/4GE70/2K6.

3/96 Work Flat
- 1907: TCWC/4GE67/2K6.
- 1-24: 4GE70/2K28A.

4/97 Work Flat
- 1912: TCWC/4GE70/2K6.
- 1-24: 2K28B.

1/67 Tower Car
- 1904: Bemis/4GE67/2K12. (Trucks and Motors from 95.)
- 19??: DSR.
- 10-32: 2K6. (Scrapped 4-33.)

1/141 Wrecker
- 1911: TCWC/4GE70/K28B.
- 5-28: K35JJ.

SINGLE TRUCK DOUBLE END CARS 52 and 57

- 1919: McGuire/2SRG30/2K2.
- 5-28: 2GE67/2K28.

SINGLE TRUCK SERVICE CARS

1/88 Supply Car
19??: McGuire/2SRG30/2K2. (2SRG30 from 31 between 3-00 and 5-10.)
10-32: 2GE67/2K10.

131 Supply Car
9-20: McGuire/2WP30/2K2.

5/142 Work Flat
4-17: McGuire/2SRG30/K2 from 85.
2-35: K10.

6/143 Work Flat
7-17: McGuire/2SRG30/K2 from 61.

7/144 Work Flat
7-17: McGuire/2SRG30/K2 from 49.
10-32: 2GE67/K10.

8/145 Work Flat
7-17: McGuire/2SRG30/K2 from 42. (42 got McGuire/2SRG30/K2 from 50.)

5/147 Snow Plow (PPTC 12)
9-17: McGuire/2WP30/?
5-28: 2GE67/2K10. (Scrapped 6-31.)

3/148 Tower Car (PPTC 13)
9-17: McGuire/2WP30/2K2. (Tower Car 51 was scrapped 8-23. As of 1-24 listed as 2/148. Scrapped 4-30.)

June 2, 1997

Jim,

Thanks so very much for sending the equipment plates from 1928, 1932 and 1935. I received them Saturday just before I had to leave for work on the PCC 322 restoration. It made my Sunday afternoon quite enjoyable as well as a little frustrating.

The new plates fit nicely between the previous plates and provided some more specific information between dates. Unfortunately the DSR mechanical personnel were not specific as to truck designation numbers and I suspect a little careless on occasion with the use of ditto marks. I have revised the list I previously sent you. I do want to analyze it thoroughly, but at a leisurely pace, car by car before reprinting.

The listing of trucks and motors on page 409 of ERofM apparently dates to after the Feb. 1935 plate. I borrowed carloads of files from Wayne when I was researching for the book; I don't recall from what record this data was obtained. You have previously sent me a copy of a memorandum dated November 13, 1936, entitled "Data on Double Truck One-Man Cars relative to Treadles, Sanders, Control, Motors and Braking Ratio". There is a pencil number in the upper right-hand corner, either 3.42 or 5.42. You sent one page, and apparently there were two or more pages. Would it be possible to get a copy of the missing page(s)? This may give me a clue as to the differences between the list on page 409 and the Feb. 1935 plate. 5.52c

Now that I'm retired and have more leisure time, I enjoy digging deeper into these technical subjects. Unfortunately the records available indicate the persons keeping them were not intent on preserving accurate details for historical purposes. And I learn how much I did not know, but thought I did. I note from your letter of May 28th that I have neglected to explain my "technical shorthand", developed in the course of typing 22 pages pertaining to TCRT's shifting of trucks, motors and controllers. I have made a notation to write an explanation for you when I reprint the listing.

Your question as to motors on the snow plows is a good one. Part of the problem may be wind-blown snow getting into the earlier motors, plus the effect of Duluth grades. The building of the line to the ship yards with more open track may have caused the 1917 changes. In the ERofM Supplement I noted that in 12-07 TCRT sold DSR one set of Baldwin #3 trucks with GE 87 motors (60 h.p. each). This hasn't shown up in DSR records until the October 1932 plate in which Snow Plow 4/146 is listed with Baldwin #3 trucks. (TCRT records show Baldwin #4, although most BLW#4 were actually BLW#3 altered to accept GE 73 motors instead of GE 87.) (What caused DSR to belatedly recognize the difference?) The GE 73 motors were of 75 h.p. each. The C-6 controller was designed for multiple-unit control, using a separate low-voltage system in the controller operating high-voltage equipment mounted under

the car-floor. See photo page 270 ERofM.

We had a pleasant experience in Newark. The employees were very helpful and accomodating. We took turns operating PCC #9 (TCRT 328) over the entire line, three round trips, between the scheduled mid-day service (6 minute headway). I now have much more respect for the PCC car. It's response to acceleration and braking truly surpasses the automobile. They also had a car spotted over the inspection pit and showed us all the electrical and mechanical details and how to cope with them. I'm not an electrician or mechanic but I appreciated the experience of seeing plus knowing it was extremely helpful to George Isaacs and John DeWitt who are responsible for the restoration of TCRT 322. MTM's problem will be how to demonstrate this acceleration/ deceleration using novice operators on track within a heavily used public park.

Thanks again for your assistance and the photocopies. I hope you can make it to the Twin Cities this summer as you previously mentioned. I have gotten back into the management of MTM and could arrange for you to operate DSR 78 over MTM's trolley line. Undoubtedly you have already been accorded this privilege, but how about another opportunity? We use DSR 78 sparingly because of stiff truck springs and deteriorating track conditions. But this spring we have replaced 400 cross-ties financed by an ISTEA grant and the track conditions are much better.

TWIN CITY RAPID TRANSIT CO.
TRUCK IDENTIFICATION
Refer to Page 292 ERofM

The basic descriptive information on this page was taken from an early TCRT memorandum, supplemented by research performed during 1952. Additional research during 1996-1997 is summarized in this paper.

Brill Trucks

The A. L. Drum & Co. valuation reports are of no assistance whatsoever.

Actual Model	TCRT Terminology	Drum Terminology
27-A1	Brill (Old)	not included
27-A2	Brill 01, 02, 03	Brill 27
27-E1½ (*)	Brill 04	Brill 27A-1
27-F1 (#)	Twin City	Twin City Brill 27E-2

(*) We had assumed these were the Brill 27-E2 trucks. However based on Brill specifications this model appears closest to TCRT's usage.

Model	Car Weight Complete with Load	Wheelbase	Max. Motor HP
-E1	46,000 lbs.	6-0 and 6-6	75
-E1½	53,000 lbs.	6-0 and 6-6	100
-E2	63,000 lbs.	6-3 and 7-0	150

(#) Charlton's book lists this model as "discontinued early". Capacity 40,000 lbs., outside hung motors, inside hung brakes, cast steel frame, wheelbase 4-0, 4-6 and 4-10 (standard 4-6). No photographs. TCRT construction journals record the cost of purchasing arch beams, fitting wheels and axles, with these costs charged back to the J. G. Brill Co. Apparently obsolete truck frames purchased from Brill and modified in TCRT shops (wheelbase 5-0).

Photographs: 27-A1 page 242, car 614; 27-A2 page 249, car 875; 27-E1½ page 304, car 1046.

Baldwin Trucks

#1 Type 123. Photos on page 134 (center, use magnifying glass) and page 304 (car 1051). (Used on TCRT 1042-1107,1124-1144 and DSR 178-182.)

#2 Type 167 for GE 73C motors. (Used on TCRT 1112-1123,1145.)

#3 Type 338 for GE 87 motors. Identical to #4 truck except that the swing link connection from truck bolster to transom is identical to #5 truck. (Purchased 1906 for TCRT 1146-1195. One set sold to DSR 12-1907.) When the GE 87 motors were replaced with GE 73C motors and later GE 216 motors the designation was gradually changed from #3 to #4. After 1912 the #3 designation no longer appears.

#4 Type 188 for GE 73C motors. (Used on 1255-1265.) The Twin City #4 listing for the UofM Switch Car is interesting; the photo on page 263

shows the trucks with a wide (split?) pull rod (see TC #5). The photo of Sprinkler Car 59 on page 262 which was listed with Baldwin #4 trucks also seems to show the same wide (split?) pull rod. The MSR 1-1-16 valuation lists three cars from the 1380-1412,1414-20,1423,1426 group with "split pull rods". However other photos of passenger cars and snow plows with Baldwin #4 trucks do not show this style of pull rod.

#5 "Same as Twin City #5 trucks", which see. (Used on TCRT 1196-1309 and DSR 183-203.)

Twin City Trucks

#5 "Wide split pull rod around wheels". For photos of this style of brake pull rod, see page 293 upper left-hand corner and page 298 upper left-hand corner (car 1217); note that these are Baldwin #5 trucks. However you can't determine if the pull rod is just wide or wide and split. A Chicago Rapid Transit Co. drawing of a Baldwin MCB truck (copy attached) clearly shows a wide split pull rod. (Used on TCRT 1310-1369 and DSR 204-214.)

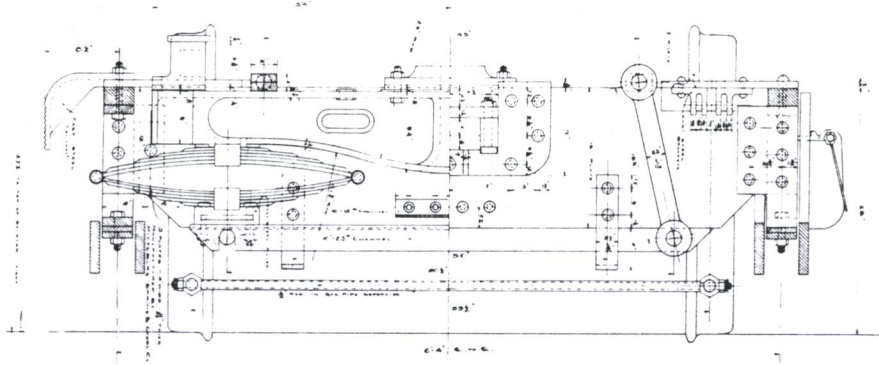
#6 and #8 These are dealt with together as the titles on two TCRT shop drawings include both numbers. The only differences mentioned on page 292 involve the equalizer bar noses and the frame sizes: short nose and 1½" frame on the #6 trucks, and long nose and 1¼" frame on the #8 trucks. The short nose is depicted in the photograph on page 397 and the long nose in the photograph of a #9RB truck on page 292. (#6 trucks were used on TCRT 1370-1481 and DSR 215-219,222-241. #8 trucks were used on TCRT 1482-1685 and DSR 242-254.)

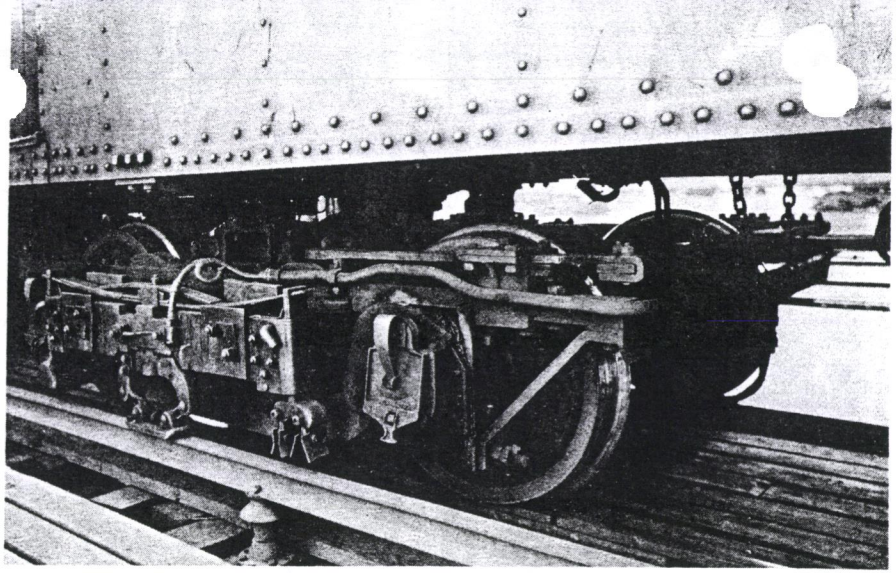
To further confuse matters, TCRT drawing number 27D1550 dated 4-10-09 titled "Truck Assembly-Twin City #6 & #8" is actually of a #8 truck with GE 203 motors. TCRT drawing number 23D1551 dated 5-19-09 titled "Truck Brake Arrangements No. 5-6-8 Trucks" is also of a #8 truck. Both drawings show the normal outside pull rod. However TCRT drawing number 35E1350 of the first Class L-8 cars shows the car on #8 trucks but with wide (split?) pull rods!

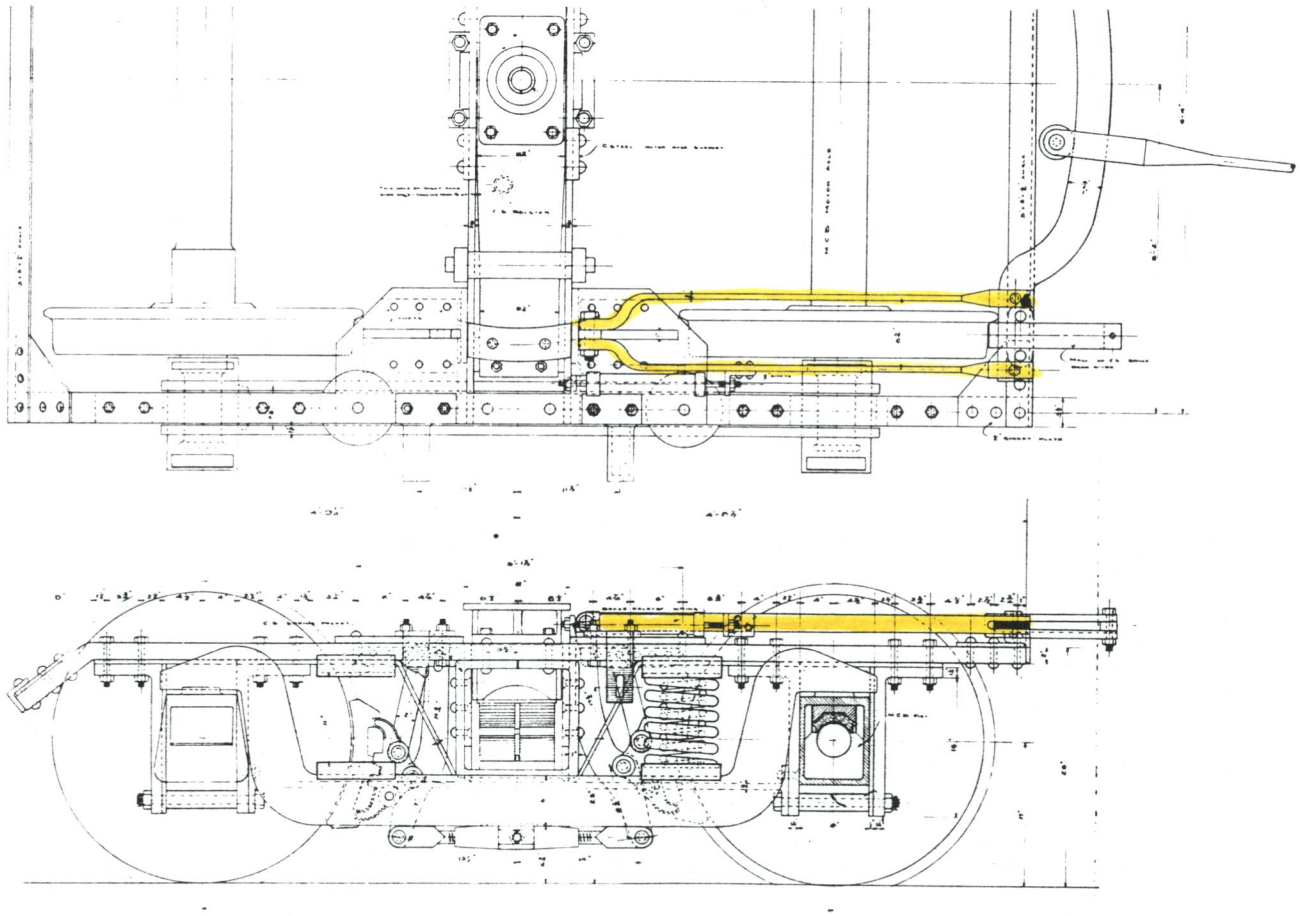
The identification of the DSR truck in the photograph caption on page 397 as Twin City #5 is uncertain. It does not have the wide split pull rod. It does have what appears to be a manufacturer's identification plate on the equalizer bar. Other photographs of Baldwin and Twin City trucks on TCRT and DSR do not show such plates. It seems more likely to be a Twin City #6 truck.

#9 is the easiest to identify because of the holes in the equalizer bars. See photographs of car 1788 on page 277. (Used on TCRT 1686-1855 and DSR 257-278.)

A basic problem in Baldwin and Twin City truck identification in photographs is that the camera angles and carbody shadows hide the equalizer bar noses and brake pull rods.







LEFT: These drawings illustrate a typical later-model MCB truck. The inside–hung brakes were actuated by pulling the arm at the right. These partial sections clearly show how the equalizer coil springs support the truck frame. Also shown is how the spring plank carrying the elliptical springs is hung from the frame on swing links with the bolster carried directly on the elliptical springs. **ABOVE:** A Baldwin MCB motor truck under car 4438. All 4000-series cars were equipped with MCB trucks. **—George Krambles Collection.**

October 25, 1996

Jim,

Answers to your questions.

1st 833-844 were built during Aug-Oct 1900 and then sold to DSR. TCL built **2nd** 833-844 for itself as replacements in April 1901.

163-177 Class D-7. The number 7 refers to the type of rear steps. Apparently W J Smith introduced this numbering for new building in 1908-09 (I-1, J-2, K-2). He then apparently retroactively numbered the previous types (3,4,5,6 and 7). 1910 new building started with K-8. The number 7 applies to double gate steps with divided brass handrails and castings. Refer to the photo of TCL 969 on page 250 and DSR 170 on page 398. You will note that both cars have the same step hardware.

238-241 were TCL 1st 1481-1485 and were Class K-8 (DSR roster page 394) and as such had the hinged motorman's cab door. TCL built **2nd** 1482-1485 for itself as replacements one year later but they were now Class L-8 with the sliding motorman's cab door.

TCL did not assign TCL numbers to cars built new directly for DSR. The TCL numbers that are causing the problem appear only on the DSR equipment data sheets. It appears to me that these numbers refer to TCL cars that were being built at the same time the DSR cars were being built. Why DSR did this I do not know, unless it provided a reference for ordering replacement parts. TCL cars that operated on the TCL system but were later sold to DSR are indicated on that two page list of building dates I mailed you several months ago. The only correction is that 178 should be shown as I1043. (TCL built a **2nd** 1043.)

Flat Car 3/96 was built by DSR in 1907 according to the DSR Sept 1918 roster. I note the DSR roster indicates DSR trucks but photographs show the car with Twin City Work Car trucks with outside hung brakes.

The Crane Car was a standard TCL Work Car but reinforced to accommodate the crane. TCL would have built the entire car except for the crane itself, which would have been purchased. I have seen a TCL Mech. Dept. tracing of a standard Work Car with the DSR crane penciled in. I do not know who purchased and installed the crane. I suppose TCL could have done so and furnished the car complete, but DSR could just as well have done this. Perhaps the existence of the tracing indicates TCL may have performed this work.

Snow Plow 4/146 was probably built complete by TCL. Identical TCL Snow Plows 75-82 followed in Dec 1917 thru Mar 1918.

I have a question. On page 409 I have a listing of trucks, motors and controllers on the cars rebuilt for one man operation. Is there any readily available information on subsequent transfers and/or changes? I'm curious as to what DSR may have done after TCL management was no longer involved.

Russ

June 27, 1997

Jim,

Many thanks for sending all the latest photocopies and blueprints. I have studied all of them, and in the process found myself re-checking TCRT records pertaining to DSR. During the past two years I have been doing some detailed TCRT research as to (1) changing trucks, motors, controllers, plus (2) re-habilitation and repainting dates. There are a number of actual as well as seeming clerical errors in TCRT records (which Ed Nelson also noted), and I notice the same thing in these DSR records. It appears that the DSR Mech. Dept. plates you previously sent me are more reliable.

The following responses are to questions in your June 18th letter.

Identification of trucks in ERofM photographs.

(a) Page 21. This is a Twin City truck, the first truck they manufactured, in 1900. I suspect these were obsolete Brill 27-F1 truck frames which TCRT purchased and modified. They were used on 1st 833-844 when built, but replaced by Brill 01 (Brill 27-A2) when sold to DSR. (I now wonder if 1st 833-844 may have been operated on TCRT before shipment to DSR.) These Twin City trucks were installed on 868-869 when rebuilt double end for DSR.

(b) Pages 143 and 241. These are Bemis 29 trucks. TCRT did not use the 29 designation. They were originally referred to as Bemis M.T. (for Maximum Traction) as they were two-motor trucks. Page 235 shows what TCRT referred to as Bemis C.B. (for Center Bearing) trucks, although they were still Bemis 29 trucks, but with four motors. What complicates things is that TCRT subsequently referred to all these trucks as simply Bemis, and any truck could have either two motors or four motors.

(c) Page 267. Crane Car #83 had National Coil Spring Arch Bar trucks.

(d) Pages 404-408: mailed previously in response to an earlier question.

(e) The trucks on 301-305 are actually Twin City #12. They were designed by TCRT's Master Mechanic Walter J. Smith (DSR's Master Mechanic prior to 1906). Lightweight Noiseless Electric Street Car Co. always referred to them as W.J. Smith #12 trucks. The DSR cars were built for LWNESCCo. which is why DSR listed them as Smith #12 trucks.

(f) Visual differences between various Baldwin/TCRT trucks: see separate write-up enclosed.

I very much appreciated the copy of the car construction costs. I suppose the reason cars 170-174,177,181,183-184 were omitted was because of different Division assignments on the two valuation dates.? I have a similar tabulation on TCRT cars. A future project will be to compare the DSR costs with the TCRT costs. On ERofM page 546 right-hand column are some lightweight car cost figures taken from DSR correspondence. It is curious that the cost per car (body, trucks, brakes, electrical) on TCRT 1-4 are $11,270 each, DSR 301-305 $11,739 each, and the actual completed work order costs on TCRT 2006-2030 calculate to $11,037 each. I wonder where DSR got the much lower figure on these 25 cars.

I'm working on a separate write-up comparing built dates, DSR versus TCRT. Will mail this later, when completed.

Russ

8212 Sheridan Ave. S.
Bloomington MN 55431-1646

Answered 11/30

November 16, 1995

Jim,

Thanks for the Twin City postcards. MTM is accumulating a collection thanks to donations such as yours. I will see that these are added to the collection.

The Edmonton Radial Railway Society in 1991 issued a reprint of "Street Railways--Their Construction, Operation and Maintenance" produced by C. B. Fairchild in 1892. I first noticed it in the bookstore at Seashore Trolley Museum when I was there for the dedication of restored TCRT 1267. On Pages 181, 184 and 185 there are line drawings of the Duluth incline railway. If you have not seen these I would be happy to make photocopies for you.

Now that I am retired, I have more time to meditate on research problems. DSR and SRTR still fascinate me, especially the early days. Following are my thoughts on your letter of 11-9-95 pertaining to DSR cars 47 thru 95.

The freight bills for shipping 8 cars from LaClede in St. Louis to Duluth during April, 1892, indicate to me that these cars probably resulted from cancellations and/or rejects of orders by other companies. (Numbers 100-103, 112, 114, 118, 127.) Carbuilders usually offered such cars at bargain prices to other companies, for obvious reasons. Previous DSR car orders were small: 19-30 = 12 cars, 31-37 = 7 cars, 38-43 = 6 cars, and 44-46 = 3 cars. Perhaps they ordered 12 cars this time, to be numbered 47-58. Perhaps an offer from LaClede for eight more cars was too good to resist, considering the Highland Improvement Co. and Lakeside Ry. lines then under construction. I assume DSR would have re-numbered the cars (and perhaps repainted) these eight cars to 59-66.

I am speculating that four of these eight cars were shorter in length, perhaps intended for the Highland Improvement Co. line. The photograph of Brightwood Ry. (Washington D.C.) 10 is identical in all respects to Interstate Traction Co. 1-4; 10 is listed in their roster as a 16 ft. six window closed motor. I am speculating that these four cars, perhaps originally 100-103, were re-numbered 63-66, and were sold to Interstate Traction Co. in 1899. I don't have available any photos of DSR cars numbered between 58 and 68; perhaps you do and can readily determine if I am wrong.

I note that in my book cars 47-62 were shown as built May-July 1892. This leads me to believe that the eight cars were shipped first because they were readily available, and the newly built cars shipped subsequently.

The double truck open motor car Tom Lowry shipped to the Highland Improvement Co. bore the number 67 according to the bill of sale to DSR 6-12-1894. Apparently this number was assigned by DSR when the car was received by HIC in June 1892, as the LaClede,October 1893, cars were numbered 68-87.

The next question is when did Supply Car 88 receive that number? Woodland Co. open cars 1-2, DSR 91-92, were sold to Interstate Traction Co. in May 1900. The Woodland Co. was not formally acquired by DSR until 7-1-1901. If the 1895 date for 88 is correct, then the Woodland Co. cars would have to re-numbered 89-94 before Highland Improvement Co. car 67 was re-numbered 95. (DSR acquired the Highland car 6-12-1894.) Complicating the situation is that note 9 on page 385 of ERofM reports a newspaper article dated 6-1-1893 that open trailer 92 was being motorized.

1901 seems to be a key date. This is the year that 151-162 were built by TCRT as well as incline car 163 (as numbered by TCRT).

63-66	sold to Interstate Traction Co. 1899?
63	Incline car built 1901 as 163; renumbered 63 by DSR.
64	Work Flat #1 built 1901 by DSR.
65	Work Flat #2 built 1902 by DSR.
66	Snow Plow #2 built 1903 by DSR.
67	Tower Car #1 built 1904 by DSR from underframe and trucks of 95, formerly 1st 67. (coincidence?)

In addition to all of the foregoing, I am still curious about the lack of vestibules on Interstate Traction Co./Park Point Traction Co./ Tower Car 13. If this is one of the ex Superior cars 110 or 117 (as the photo shows characteristics only of Northern Car Co. styling), then not all the Superior cars were rebuilt with vestibules. Speculation: were Northern Car Co. cars disliked, out of favor, or giving problems (builder no longer in existence)? Decline of ridership and resulting financial problems in the 1893-1897 depression may also have been a reason for not vestibuling some cars. Many Twin City cars were not vestibuled for this reason.

Several years ago you sent me a photocopy of Mechanical Dept. Plate II "Rolling Stock of the Duluth Street Railway". Would it be possible to obtain a photocopy of Plates I and III? (I used Wayne's copies when I was writing the book.) I have developed an interest in Snow Plow #1/39 and the early Superior cars.

Russ

December 7, 1995

Jim,

Thanks for sending DSR Plates I-V. I was able to make quite satisfactory photocopies. I am returning the originals. As I get time I'll dig thru the details.

Also enclosed are the copies of the Duluth incline drawings. They are actual size. The copier I was using would have a paper jam if pressure was placed on the glass plate so I couldn't flatten out the book as much as I would have liked. There was no specific discussion in the book on the Duluth incline other than the comments made on the photocopied pages. There is no cost.

The date of 1895 for Supply Car 88 still bothers me. Woodland cars 89-90 were destroyed in the 11-16-1894 Woodland carhouse fire. Thus it appears that 88 was built after October,1893, (when the LaClede cars 68-87 arrived) and before the Woodland cars were re-numbered, which appears to have been before 11-16-1894. Highland DT Open 67 was sold to DSR 6-12-1894 and could have been renumbered 95 shortly thereafter. It is curious that two of the Woodland open trailers were sold to Interstate Traction Co. 3-21-1900; the Woodland Co. was not organized until October,1900, or thereafter, and the bill of sale (cars not mentioned) to DSR is dated 7-1-1901.

Assuming 63-66 were LaClede 1892-built cars sold to Interstate Traction Co. in May, 1899, and that TCRT-built incline car 163 had to re-numbered 63 before TCRT-built cars 163-177 arrived during April-June, 1904, the work equipment numbering scheme must have been developed during the 1901-1904 time period. I wonder why the incline car was renumbered in the work equipment series, unless TCRT made a mistake in numbering the new 1904 cars. Note the Duluth and Superior number separation:

		Duluth	Superior
Flat Car 1	built 1901	64	
Plow 1	built 1902		139
Flat Car 2	built 1902	65	
Plow 2	built 1903	66	
Tower Car 1	built 1904	67	

I wonder if this was based on actual assignment at that time, or if this was a method of obtaining numbers for six cars. They could have re-used 89-94 after 1902 unless they needed to maintain a record of cars purchased from other companies.

I'll be interested to learn if you come up with anything as a result of your re-examination.

Russ

If you would have any interest in finding out the costs of constructing the DSR cars, incline equipment included, I would be willing to research this for you.

Are you acquainted with any Kansas historians? I would like to find ou what happened to several TCRT cars that ended up in Kansas. Charles City Western Ry. 52 was ex TCRT 621. Other cars of this group (607-626) that went to Kansas were the following.

220
607-626 247

	Per Cash Receipts Journal	Per Master Mechanic's Records
Kansas City, Kaw Valley & Western Ry. 1914:	611, 614, 615, 617	611, 614, 615, 617
Kansas City Western Ry. (KC-Leavenworth) 1916:	-----	610, 622, 623
Kansas City, Lawrence & Topeka Ry. (KC-Zarah) 1916-1917: KC, Merriam & Shawnee Ry	610, 616, 622, 623	613, 616, 620
A. E. Saunders 1914:	613, 620	-----

This would also help me determine which record is correct.
Photographs would be interesting, if available. Some of the old single truck cars ended up in Leavenworth city service but I am not too interested in them. If some information were readily or easily available on them I would gladly receive it but would not want any one to mount a vast research project.

Monday 8:00

Minnesota Railroad & Warehouse Commission

Annual Reports

Brooks-Coleman Law

and

Resulting Valuation Studies

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Pages 205-221, 230-237

1923-1924

Pages 23-31

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1927-1928

Pages 194-195 (MSR and M&StPS RR only)

1929-1930

Pages 121-152, 193

1933-1934 (this volume missing; use J.J. Hill Reference Library)

Pages 263-267	Re-organization and issuance of securities, Duluth-Superior Transit Co.
Page 268	Issuance of Notes for purchase of trolley buses (#7 J. G. Brill Co.)(#9 Twin Coach Corp.)
Pages 270-273	SPCR: two tokens for 15¢ rate

1935-1936

Pages 243-256 (MSR and SPCR only)

AL	REMODELED SEATS	REMODELED WEIGHT	DISPOSITION RETIRED						
			1931	5/31	BODY	SOLD	TO	E.E. HALLETT $90	151
			✓	4/31	✓	✓	✓	PERCY HALLOWAY $75	152
			✓	5/31	✓	✓	✓	MARTIN CHRISTIANSEN $90	153
			✓	3/31	✓	✓	✓	J.D. MAHONEY $45	154
			✓	5/31	✓	✓	✓	ROY B. LEWIS 75	155
			✓	4/31	✓	✓	✓	WM. E. PUGH 80	156
			✓	5/31	✓	✓	✓	OSCAR E. ANDERSON 75	157
			✓	5/31	✓	✓	✓	E.E. HALLETT $90	158
			✓	5/31	✓	✓	✓	JOSEPH ZACHER 75	159
			✓	5/31	✓	✓	✓	ROY B LEWIS 75	160
			✓	3/31	✓	✓	✓	R.J. GRAY 80	161
			✓	4/31	✓	✓	✓	JOHN SHIELDS 90	162
50 (44)	48500	1934	1939						163
✓	48300		1937	10/37	✓	✓	✓	JOHN HENDRICKSON $85—	164
✓	✓		✓	11/37	✓	✓	✓	JOHN O. BLOCK $85—	165
✓	✓		1938	7/38	✓	✓	✓	VICTOR THOMPSON $60—	166
✓	✓		1937	11/37	✓	✓	✓	GORDON O. PETERSON $80—	167
✓	✓		1938	2/38	✓	✓	✓	NELLIE NELSON $95—	168
✓	✓		1/6/1927					WRECKED - SUPERIOR	169
✓	✓			5/39	✓	✓	✓	C. ARNESON 75	170
✓	✓		1939						171
✓	✓			3/39	✓	✓	✓	MIKE BLIN 75—	172
✓	✓			5/39	✓	✓	✓	V. THOMPSON 60—	173
✓	✓			3/39	✓	✓	✓	MIKE VALENCIA 75	174
✓	✓			3/39	✓	✓	✓	NICK [illegible]	

								163
			10/37			JOHN HENDRICKSON	$85—	164
	48300	1937	11/37			JOHN O. BLOCK	$85—	165
			7/38			VICTOR THOMPSON	$60—	166
		1938	11/37			GORDON O. PETERSON	$80—	167
		1937	2/38			NELLIE NELSON	$95—	168
		1938				WRECKED - SUPERIOR		169
		1/6/1927	5/39			C. ARNESON	75	170
								171
		1939	3/39			MIKE BLIN	75—	172
			5/39			V. THOMPSON	60—	173
			3/39			MIKE VALENCIA	75	174
			3/39			NICK MEYERSON	75	175
			4/39			GEO. McDONALD	75	176
		1937	2/38			L.V. LINDQUIST	$95—	177
			6/39			H. HUTTEL	60—	178
			4/39			GUNARD CARLSON	75	179
		1935	5/39			E. ERICSON	75	180
			6/35			HENRY KEISLING	$50—	181
			4/35			ROBT. B. THOMPSON	$60—	182
			6/35			JOHN VORHEES	75	183
								184
			5/35			EMIL GARASHA	75—	185
			8/35			MATT JACOBSON	85	186
			10/35			J.M. IVERSON	75	187
								188
			6/35			G.A. ANDRESEN	$85—	189
			7/35			CHAS. G. JOHNSON	85—	190
			6/35			ROBT. BESSER	80—	191
			9/35			JOHN AHO	75—	192
			6/35			OSCAR JOHNSON	$30—	193
			5/35			C.C. BARBY	$80—	194
			6/35			MRS. WM. LINDE	$75—	195

REMODELED SEATS	REMODELED WEIGHT	DISPOSITION RETIRED		BODY	SOLD	TO		
		1935	6/35				MRS. LILLY SPINDLER $80—	196
		-	5/35	✓	✓	✓	HJALMAR JOHNSON $80—	197
50	49600	✓	✓	✓	✓	✓	W. R. COLLETT $85—	198
✓	-	1939	5/39	✓	✓	✓	F. D. KERSLAKE (SP.?) $85—	199
✓	-	-	5/39	✓	✓	✓	W. B. JOYCE $85	200
✓	-	-	6/39	✓	✓	✓	A. JOHNSON $85—	201
✓	-	-	7/39	✓	✓	✓	GORDON ZENDEL $85—	202
✓	-	-	6/39	✓	✓	✓	V. A. YOUNG $60—	203
✓	✓	-	8/39	✓	✓	✓	HARRY HUBER $85—	204
✓	✓	-	7/39	✓	✓	✓	JOHN LAFLEUR $85—	205
✓	✓	-	6/40	✓	✓	✓	T. L. PETERSON (SP.?) $85—	206
✓	✓	-	6/39	✓	✓	✓	A. JOHNSON $85—	207
✓	✓	✓	8/39	✓	✓	✓	A. MATINEAU (SP.?) $85—	208
✓	✓	-	7/39	✓	✓	✓	FRED HARRIS $85—	209
✓	✓	-	11/40	✓	✓	✓	MATT CARPENTER $65—	210
✓	✓	-	6/39	✓	✓	✓	M. ANDERSON $85—	211
✓	✓	-	7/39	✓	✓	✓	ALBERT M. BORUP $85—	212
✓	✓		7/40	✓	✓	✓	PAUL RIGA $65—	213
✓	✓		8/40	✓	✓	✓	AMIL VO---? $65—	214
✓	✓		8/39	✓	✓	✓	C. J. MIDLAM $85—	215
✓	✓		4/39	✓	✓	✓	A. C. DIETTRICH $60—	216
✓	✓		9/40	✓	✓	✓		

			7/39	✓	✓	✓	A. MATINEAU (SP-?) $85—	208
✓	✓		7/39	✓	✓	—	FRED HARRIS $85—	209
✓	✓	✓	11/40	✓	✓	✓	MATT CARPENTER $65—	210
✓	✓	✓	6/39	✓	✓	✓	M. ANDERSON $85—	211
✓	✓	✓	7/39	✓	✓	✓	ALBERT M. BORUP $85—	212
✓	✓	✓	7/40	✓	✓	✓	PAUL RIGA $65—	213
✓	✓	✓	8/40	✓	✓	✓	AMIL VO---? $65—	214
✓	✓	✓	8/39	✓	✓	✓	C.J. MIDLAM $85—	215
✓	✓	✓	9/39	✓	✓	✓	A.C. DIETTRICH $60—	216
✓	✓	✓	9/40	✓	✓	✓	A. OSTRANDER $50—	217
✓	✓	✓	4/39	✓	✓	✓	C.A. JOHNSON $85—	218
✓	✓	✓	11/40				SCRAPPED IN YARD	219
		✓	9/39	✓	✓	✓	W.E. IRON + METAL - $200—	220
		✓	✓	✓	✓	✓	✓ ✓ ✓ ✓	221
		1936	5/36	✓	✓	✓	HERMAN KULUS 85—	222
✓	48900	1939	6/40	✓	✓	✓	A.E. LAMPRECHT 85—	223
✓	✓	✓	8/39	✓	✓	✓	HARRY HUBER $85—	224
✓	✓	✓	9/39	✓	✓	✓	E. LUNDHOLM $85—	225
✓	✓	✓	6/40	✓	✓	✓	R. JOHNSON $65—	226
✓	✓	✓	7/40	✓	✓	✓	W.P. MOODIE $85—	227
✓	✓	✓	7/40	✓	✓	✓	J.L. TRAPP $85—	228
✓	✓	✓	7/40	✓	✓	✓	ARNE FROKE (SP-?) $85—	229
✓	✓	✓	4/39	✓	✓	✓	H.L. DAVIS $85—	230
✓	✓	✓	6/40	✓	✓	✓	RUTH TAFFAN $60—	231
✓	✓	✓	9/39	✓	✓	✓	J. SAGE $85—	232
		1935	6/36	✓	✓	✓	EMIL JARVI 60—	233
✓	✓	1939	9/39	✓	✓	✓	D.L. JOHNSON $85—	234
		1936	4/36	✓	✓	✓	LEE E. COUTIER 85	235
✓	✓	1939	7/39	✓	✓	✓	EILEEN BEAUDRY (SP-?) $85—	236
✓	✓	✓	6/39	✓	✓	✓	A.J. McDONELL $85—	237
✓	✓	✓	9/40	✓	✓	✓	A. FICHTNER 85—	238
✓	✓	✓	4/40	✓	✓	✓	C. RASMUSSEN 85—	239
✓	✓	✓	11/40	✓			SCRAPPED IN YARD	240
✓	✓	✓	4/39	✓	✓	✓	J.N. NYSTROM $85—	241

308
245
63

REMODELED ATS	REMODELED WEIGHT	DISPOSITION RETIRED					
50	48900	1939	8/40	BODY SOLD TO	AMIL VO--- ?	$65 —	242
/	/	/	12/39 ✓	✓	D. W. STEWART	$85 —	243
/	/	/	4/40 ✓	✓	S. SECAREA	$65 —	244
/	/	/	7/39 ✓	✓	V. A. YOUNG	$30 —	245
/	/	/	2/40 ✓	✓	WM. PRESTON	$85 —	246
/	/	/	8/40 ✓	✓	WALTER BLACKTOP	$65 —	247
/	/	/			BURNED AT YARD		248
/	/	/	6/40 ✓	✓	T. LUKKONEN	$85 —	249
/	/	/	7/39 ✓	✓	JOHN HITZEBERG	$85 —	250
/	/	/	6/40 ✓	✓	H. C. FRYE	$85 —	251
/	/	/	7/39 ✓	✓	JOHN RONES	$85 —	252
/	/	/	9/40 ✓	✓	A. REHBEIN	$85 —	253
		/	10/39 ✓	✓	A. TAKKONEN	$85 —	254
	/	✓					255
		✓					256
		1936	3/36 ✓	✓	JOE HASSETT	$85 —	257
		/	4/36 ✓	✓	ARNOLD E. ENEBERG	$85 —	258
		/	3/36 ✓	✓	PAUL MAGNUSSEN	$85 —	259
			4/[illegible]	✓	EMMA GOODBAR	$85 —	260
							261

		✓						255
		✓						256
		1936	3/36	✓	✓	JOE HASSETT	$85—	257
		✓	4/36	✓	✓	ARNOLD E. ENEBERG	$85—	258
		✓	3/36	✓	✓	PAUL MAGNUSSEN	$85—	259
		✓	4/36	✓	✓	EMMA GOODBAR	$85—	260
		1935	10/35	✓	✓	J. M. IVERSON	$75—	261
		1936	6/36	✓	✓	HATTIE POND	$85—	262
		✓	3/36	✓	✓	NICK BELOSHAPKA	$85—	263
		1917	9/21/17			WRECKED-SUPR		264
50	✓	1939	9/39	✓	✓	J. HENDRY (SP-?)	$85—	265
✓	✓	✓	8/39	✓	✓	R. VALENTINE	$85—	266
		1936	6/36	✓	✓	ALCIDE LEMAY	$85—	267
✓	✓	1939	6/39	SOLD TO DMIR Ry. (INCL. TRUCKS)			$1200—	268
		1935	5/35	BODY SOLD TO F.A. GRIFFIN			$60—	269
		✓	10/34	✓	✓	COLLEGE ST. SCHOLASTICA	!	270
		✓	9/35	✓	✓	J.E. HAKALA	$80—	271
		✓	6/35	✓	✓	MRS. WM. LINDE	$75—	272
		✓	8/35	✓	✓	L.J. VERVILLE (SP-?)	$70—	273
		✓	5/35	✓	✓	JOHN O. DAHLSTROM	$65—	274
		✓	4/35	✓	✓	W.C. WAKEFIELD	$80—	275
		✓	10/35	✓	✓	J.M. IVERSON	$75—	276
		✓	8/35	✓	✓	W.T. MOREMAN	$75	277
		✓	✓	✓	✓	✓	$75	278
		1920	10/24			RETURNED TO TCRT		279
		✓				✓	✓	280
		✓				✓	✓	281
		✓				✓	✓	282
		✓				✓	✓	283
		✓				✓	✓	284
		1931	7/31	✓	✓	JOHN HOLTER	$100	285
		✓	7/31	✓	✓	A. NYMAN	$100	286

DISPOSITION

REMODELED SEATS	REMODELED WEIGHT	RETIRED						
	1931	7/31	BODY	SOLD	TO	MISS D. WENNERBY	$100	287
	/	6/31	/	/	/	NONA DOW	90	288
	1936	6/36	/	/	/	FELIX GLEASON	85	289
	/	7/36	/	/	/	FRED E. HANSON	85	290
	/	7/36	/	/	/	JOHN SHOSIE	85—	291
	/	7/36	/	/	/	DALE RENNING	60	292
	/	6/36	/	/	/	JACOB E. LAINE	85—	293
	/	7/36	/	/	/	IRENE JONSON	85	294
	1938	4/38	/	/	/	ALFRED LIND	$60—	295
	/	3/38	/	/	/	ARCHIE HAKES	$70—	296
	/							297
	/	10/38	/	/	/	FRANK FOLLETTE	37.50	298
	/	✓	/	/	/	—	37.50	299
	/	11/38	/	/	/	A. H. FAGAN	45—	300
	/	4/38	/	/	/	LOUIS OSLUND	$85—	301
	/	4/38	/	/	/	GUIDO MARVELLO	$85—	302
	/	3/38	/	/	/	HERMAN JOHNSON	$85—	303
	/	6/38	/	/	/	J.C. SHIELD	$85—	304
	/	✓	/	/	/	✓ ✓	$85—	305
CAR 52	1931	7/31	/	/	/	THOS. WEINSTIN	$35	52
57	✓	7/31	/	/	/	L. DAHLGREN	$40	57

Convert many of these to paragraphs

ROSTER NOTES

Note 1 All single-truck cars in the 19 to 87 series were originally double end. Approximately ~~a third~~ half of these cars were converted to single-end operation in 1899-1905 (see ~~4.42~~ 5.42). ~~Car 163, on the other hand, was double-end during only the last six years it was in service.~~

Note 2 Trucks and motors shown are, for the most part, original equipment. ~~Some changes were made through the years (see 4.48).~~ As improved trucks, motors and controllers became available, DSR upgraded most of these equipments. These later equipments are shown on the right, see 5.48

Note 3 Original weight (except 151-162, which had an original weight of 39,680 before air brake equipment was added.) Approximately 1500 pounds was added when the cars were converted to one-man operation.

Note 4 An asterisk indicates approximate length.

Note 5 Unlike most railways and some street railways (including TCRT), DSR made little use of group numbers and specifications, as related to any car or group of cars. Brief references to these classifications seem not to have had any particular significance in the operation, assignment, maintenance, modification or accounting procedures of the company. They are shown here, therefore, as minor information only. See also 5.0

Note 6 Disposition of equipment is coded in five general categories:
1. Sold to other transit companies.
2. Sold to local salvage companies.
3. Most cars, however, were disposed of by the sale or gift of the car bodies to individuals for use as summer cottages, farm utility buildings, etc. Trucks and other mechanical and electrical equipments were removed and stored as spares or scrapped.
4. Destroyed/wrecked/scrapped/dismantled/converted to other use
5. Disposition unknown.

Note 7 ~~Horse cars 4 and 14 were sold to MPSR on 8-16-90 for $100 and $400 respectively. Car 4 had been converted to standard gauge and was still on Park Point when DSR acquired PPT in 1917. Thus, car 4 had come full circle. It was sold for scrap in March 1919.~~ Two unidentified horse cars were sold to MPSR on 8-90 for $250 each (one of these was quite probably #3). One unidentified horse car was sold to BLR in 5-1900 (see 5.36)

Note 8 Car 30 went into the Canal 9-17-93. When recovered, its truck and motors were used to motorize trailer 92. (see 5.7)

Note 9 ~~Destroyed~~ by fire in 1895. Its truck and motors were used in the building of car 88. (see 6.11)

Note 10 Passenger car 42 was converted to a private car 11-20-96 (which increased its weight and length from what is shown above when it was a standard passenger car.) The car was "decommissioned" in July 1917 and its frame, truck and motors used in the building of flat car 145. The body was sold to a ~~scrap company 5-15-18.~~ the St. Cloud (Minnesota) Public Service Co. in 2-17 (see 5.56a)

Note 11 ~~Passenger cars 47, 51,~~ 79 were retired in August 1923. Bodies, motors and controllers were removed, and the frames and trucks converted to unnumbered ash car trailers, for use in the Superior Div. (see 6.13)

Note 12 Passenger cars 49, 61, 85 were retired in April-July 1917, and their frames, trucks and motors used in the building of flat cars 144, 143, 142 respectively (see also ~~5.6~~) 5.7).

Note 13 Soon after arrival, passenger car 51 was converted to a tower car. ~~It was retired in August 1923.~~ See also note 11. and 6.10

Note 14 Cars 52 and 57 were converted to one-man PAYE in May-~~June~~ 1919 and used thereafter on the W. 4th St. line, and were ~~thus~~ the only two latter day survivors of the original single-truck cars. The cars lost their traditional curved sides, had their steps, doors and other major modifications in 12-24 (see 5.44)

Note 15 Passenger car 62 was converted to a supply car in 1915, and sold for scrap in Nov. 1923.

Note 16 ~~Numbers 63 through 67 were~~ Originally assigned to cars of the Lakeside Railway Co. which were operated jointly by LR and DSR. These five cars were apparently retired soon after DSR acquired the property in 1900, ~~and~~ The numbers were subsequently reassigned to other cars of DSR ~~(see 4.5).~~ (please see 5.5 for details.) out of these five numbers is not known.

Note 17 Following the May 1901 incline ~~tragedy~~ fire, DSR resumed a modified incline operation, ~~on~~ beginning 1-1-02, using this single car with a counter-balance. ~~There are no records of the origin of this car, other than that it was a~~ This was a former TCRT passenger car (see ~~4.34~~ 5.35). ~~This car~~, in turn, ~~was~~ replaced by 220 and 221 in 1911.

Note 18 ~~The frames, trucks and motors of double-truck open car 95 were used in the building of tower car 67 in 1904 (see 5.8).~~ Originally SRTR #1 and #2 (see 6.5).

Note 19 Purchased by MLI for MLI / DSR joint operation on the WOODLAND line. Originally named "WOODLAND PARK" and "DULUTH" (~~see 4.7~~). Used by DSR from 11/90 to 4/91. ~~(see 5.7).~~ Retired by 1900 (see 5.7).

Note 20 Purchased by MLI for MLI - DSR joint operation on the Woodland line. Originally numbered 1 through 4 (see ~~4.7~~). 5.7

Note 21 Passenger car 112 (and possibly car 111 at the same time) was converted to a tower car in 1910 (see 6.10) ~~(see 5.7a)~~ when the South Superior line was considerably rebuilt. Its work done, the car was retired two years later.

Note 22 Property of U. S. Fleet Corp. until 1921 (see ~~5.3~~). 6.3)

Note 23 ITC bought four passenger cars ~~from Laclede~~ in May 1899. One of these was fitted with wedge and wing plows at a later date for snow plow operation, ~~and~~ it was PPT 12 when acquired by DSR in 1917, ~~and then~~ renumbered DSR 147, (see ~~5.4~~). 6.4

Note 24 This is the only car whose origin is not definitely known. It was PPT 13 when acquired by DSR in 1917; then renumbered DSR 148. It could probably have been a former SRTR ~~130 class~~ car (see ~~5.9~~). 6.9)

Note 25 DSR converted 72 of its standard two-man cars to one-man operation in its shops between August 1924 and August 1930 (see ~~4.43~~). 4.44)

Note 26 Cars 255-256 were built as single-end "shorties" by TCRT in 1901 and operated in the Twin Cities until they were rebuilt for double-end operation and shipped to Duluth in December 1912 for use on the Highland line (see ~~4.22~~). 5.22) In 1930 both cars were upgraded with TCA4 trucks, K35J2 controllers, and GE 200 motors

Note 27 Cars 279 through 284 were leased from TCRT in December 1917, and returned in October 1920. Cars 280 - 283 were built in 1903; 279 and 284 in 1914 (see 5.28)

Note 28 Cars 285 and 286 were named AERIAL BRIDGE and OATKA when they went into service on Park Point 6-13-05; had been renumbered 10 and 11 when acquired from PPT in 1917. Cars 287 and 288 were numbered 20 and 21 when acquired from PPT in 1917 (see ~~4.29 and 4.46~~). 5.29 and 5.46) which had gone into service 6-11

Note 29 A single-truck motorless flat car ~~appears~~ was acquired from PPT in 1917, about 1915 unnumbered. The car was originally ~~numbered~~ used for freight movement and general hauling on the Point (see ~~also 5.50~~ 5.49)

Note 30 Obtained by allocation of the War Production Board

Note 31 Several snow plows were obtained by DCSA in the early years of electrification. Please see 6.5.

It should be noted that sale of some DSR equipments to other transit operators and salvage companies were bodies only; others were complete equipments; trucks and electrical equipments. DSR records seldom differentiated.

CAR NUMBER	TYPE	BUILDER	IN SERVICE	SINGLE-DOUBLE END see note 1	TRUCKS see note 2		MOTORS see note 2		WEIGHT see note 3	LENGTH OVERALL see note 4	GROUP see note 5 SPECIFICATION	CONVERTED TO ONE-MAN OPERATION see note 25	DISPOSITION DATE	DISPOSITION CODE see note 6	REMARKS	
222	PASS.	TCRT 1430	6-11	SE	2	TCRT #6	4	GE216	46,200	46' 8"	9	4	5-36	3	K8 GE 70	222
223	"	"	"	"	"	"	"	GE 216	"	"	"	"	3-29	6-40	3	223
224	"	"	"	"	"	"	"	"	"	"	"	"	12-29	8-39	3	224
225	"	"	"	"	"	"	"	"	"	"	"	"	10-29	9-39	3	225
226	"	"	"	"	"	"	"	"	"	"	"	"	6-29	6-40	3	226
227	"	"	"	"	"	"	"	"	"	"	"	"	1-30	7-40	3	227
228	"	"	"	"	"	"	"	"	"	"	"	"	12-29	2-40	3	228
229	"	"	"	"	"	"	"	"	"	"	"	"	9-29	2-40	3	229
230	"	"	"	"	"	"	"	"	"	"	"	"	12-29	4-39	3	230
231	"	"	"	"	"	"	"	"	"	"	"	"	7-29	6-40	3	231
232	"	"	7-11	"	"	"	"	"	"	"	"	"	6-29	9-39	3	232
233	"	"	"	"	"	"	"	"	"	"	"	"		6-36	3	GE 200 233
234	"	"	"	"	"	"	"	"	"	"	"	"	2-29	5-39	3	234
235	"	"	"	"	"	"	"	"	"	"	"	"		4-36	3	GE 200 235
236	"	"	"	"	"	"	"	"	"	"	"	"	6-30	7-39	3	236
237	"	"	"	"	"	"	"	"	"	"	"	"	4-29	6-39	3	237
238	"	"	1482	"	"	"	"	"	"	"	"	"	12-29	9-40	3	K8 238
239	"	"	1483	"	"	"	"	"	"	"	"	"	8-29	4-40	3	239
240	"	"	1484	"	"	"	"	"	"	"	"	"	2-30	11-40	4	240
241	"	"	1485	"	"	"	"	"	"	"	"	"	2-29	4-39	3	241
242	"	"		6-12	"	"	TCRT #8	"	"	43,700	46' 6"	10	4	10-29	8-40	3	242 K8 through 254 had sliding 242
243	"	"		"	"	"	"	"	"	"	"	"	"	7-29	12-39	3	doors on front platform in- 243
244	"	"		"	"	"	"	"	"	"	"	"	"	10-28	4-40	3	stead of hinged doors 244
245	"	"		8-12	"	"	"	"	"	"	"	"	"	3-29	7-39	3	245
246	"	"		"	"	"	"	"	"	"	"	"	"	10-29	2-40	3	246
247	"	"		"	"	"	"	"	"	"	"	"	"	4-29	8-40	3	247
248	"	"		"	"	"	"	"	"	"	"	"	"	7-29	7-39	4	Last car operated 7-9-39 248
249	"	"		"	"	"	"	"	"	"	"	"	"	5-29	6-40	3	249
250	"	"		"	"	"	"	"	"	"	"	"	"	4-29	7-39	3	250
251	"	"		"	"	"	"	"	"	"	"	"	"	7-29	6-40	3	251
252	"	"	1564	10-12	"	"	"	"	"	"	"	"	"	3-29	7-39	3	252
253	"	"	1565	"	"	"	"	"	"	"	"	"	"	8-29	9-40	3	253
254	"	"	1566	"	"	"	"	"	"	"	"	"	"	5-29	10-39	3	254
255	"	"	868	1-13	DE	"	*BRILL 27E	"	GE67	40,200	37' 7"	11	5		-39	3	Built in 1901 as single- 255
256	"	"	869	"	"	"	"	"	GE 200	"	"	"	"		-39	3	end cars. (See note 26) *Replaced 256
257	"	"	1684	10-14	SE	"	TCRT #9	"	GE200	41,700	46' 8"	12	4		3-36	3	by TCRT #9 and GE 200 in May 1937 257
258	"	"		"	"	"	"	"	"	"	"	"	"		4-36	3	258
259	"	"		"	"	"	"	"	"	"	"	"	"		3-36	3	259
260	"	"		"	"	"	"	"	"	"	"	"	"		4-36	3	260
261	"	"		"	"	"	"	"	"	"	"	"	"		10-35	3	261
262	"	"		"	"	"	"	"	"	"	"	"	"		6-36	3	262
263	"	"	1789	5-16	"	"	TCRT #8	"	GE213	"	"	13	4		3-36	3	263
264	"	"	1790	"	"	"	"	"	GE216	"	"	"	"		9-17	4	Wrecked in Superior rail- 264
265	"	"	1791	"	"	"	"	"	"	"	"	"	"	9-29	9-39	3	road crossing accident 265
266	"	"	1792	"	"	"	"	"	"	"	"	"	"	2-30	8-39	3	Restored 9-82 266
267	"	"	1724	8-16	"	"	TCRT #9	"	GE200	"	"	12	4		6-36	3	267
268	"	"	1719	"	"	"	"	"	"	"	"	"	"	1-30	6-39	1	Sold to DM&IRR 268
269	"	"	1716	"	"	"	"	"	"	"	"	"	"		5-35	3	269
270	"	"	1722	"	"	"	"	"	"	"	"	"	"		10-34	3	270
271	"	"	1789	6-17	"	"	"	"	"	"	"	"	"		9-35	3	271
272	"	"		"	"	"	"	"	"	"	"	"	"		6-35	3	272
273	"	"		5-17	"	"	"	"	"	"	"	"	"		8-35	3	273
274	"	"		"	"	"	"	"	"	"	"	"	"		5-35	3	274
275	"	"		6-17	"	"	"	"	"	"	"	"	"		6-35	3	275
276	"	"		"	"	"	"	"	"	"	"	"	"		10-35	3	276
277	"	"		"	"	"	"	"	"	"	"	"	"		8-35	3	277
278	"	"		"	"	"	"	"	"	"	"	"	"		8-35	3	278
279	"	"	1672	12-17	"	"	"	"	GE216	42,100	46' 8"				10-20		279
280	"	"	988	"	"	"	"	"	GE70	43,600	45' 2"				10-20		Returned to 280
281	"	"	989	"	"	"	"	"	"	"	"				10-20		TCRT 10-20. 281
282	"	"	990	"	"	"	"	"	"	"	"				10-20		See note 27. 282
283	"	"	991	"	"	"	"	"	"	"	"				10-20		283
284	"	"	1673	"	"	"	"	"	GE216	42,100	46' 8"				10-20		284
285	"	St. LOUIS	9-17	DE	"	St. LOUIS #47	2	GE67	40,616	40' 5"	16	6		-20	7-31	3	Acquired from Park 285
286	"	"	"	"	"	"	4	"	"	"	"	"		-20	7-31	3	Point Traction Co. 286
287	"	DANVILLE	"	"	"	BRILL #27G1	2	"	36,616	41' 1"	17	7		-20	7-31	3	9-1-17. See note 28 287
288	"	"	"	"	"	"	"	"	"	"	"	"		-20	6-31	3	288
289	"	TCRT 1202	11-18	SE	"	TCRT #9	4	GE200	45,240	46' 10"	18	2			6-36	3	289
290	"	" 1204	"	"	"	"	"	"	"	"	"	"			7-36	3	290
291	"	" 1212	"	"	"	"	"	"	"	"	"	"			7-36	3	Built in 1906 - 07. 291
292	"	" 1231	"	"	"	"	"	"	"	"	"	"			7-36	3	Property of Emergency 292
293	"	" 1232	"	"	"	"	"	"	"	"	"	"			6-36	3	Fleet Corp. until 1921 293
294	"	" 1234	"	"	"	"	"	"	"	"	"	"			7-36	3	294
295	"	AMER. CAR	10-19	"	1	BRILL 78M1	2	GE258	13,300	28' 0"	19	8			4-38	3	295
296	"	"	"	"	"	"	"	"	"	"	"	"			3-38	3	296
297	"	"	"	"	"	"	"	"	"	"	"	"			3-38	3	297
298	"	"	"	DE	"	"	"	"	13,900	"	20	8			10-38	3	Birney cars 298
299	"	"	"	"	"	"	"	"	"	"	"	"			10-38	3	299
300	"	"	"	"	"	"	"	"	"	"	"	"			11-38	3	300
301	"	TCRT LWNESC	4-25	SE	2	SMITH #12	4	GE258K	24,200	35' 11"					4-38	3	301
302	"	"	"	"	"	"	"	"	"	"					4-38	3	302
303	"	"	"	"	"	"	"	"	"	"					3-38	3	(See 5.32) cost $12,440 303
304	"	"	"	"	"	"	"	"	"	"					6-38	3	each 304
305	"	"	"	"	"	"	"	"	"	"					6-38	3	305
FIRE CAR ~~E16~~			5-07	DE	1	BROWNELL	2	F30		25' 0"					6-30	4	(see 6.16)
ELECTRIC SHOVEL (THEW)			4-22		1	~~TR~~ THEW	1	GE CV GECVC	56,000	27' 0"					-64	4	(see 6.15) Built by Thew
ICE BREAKER DSR			2-28		1	DSR				7' 0"					5-39	4	(see 6.14)
3 TRAILERS (ash cars)			8-23		1	LACLEDE				15' 3"					7-35 10-34 6-33	4	(see ~~note 13~~) 6.13
~~Flat Car Inter~~ Miscellaneous															6-34	4	(see note 29) Seeds o.6.12, 6.13, 6.17
2 Incline cars		Keystone Bldg	12-91	DE	4					41' 0"		15'			5-01	4	(see 4.35)
Snow Sweepers/Snow Plows																	(see note 31)

(OVER)

Built	CAR NUMBER	TYPE	BUILDER & BUILDER NUMBER	IN SERVICE	SINGLE-DOUBLE END see note 1		TRUCKS see note 2		MOTORS see note 2	WEIGHT see note 3	LENGTH (OVERALL) see note 4	GROUP see note 5	SPECIFICATION	CONVERTED TO ONE-MAN OPERATION see note 25	DISPOSITION DATE	DISPOSITION CODE see note 6	TCRT CLASS	REMARKS	
6-01	151	PASS.	TCRT 833	6-01	SE	2	BRILL 27-E-01	4	GE67	44,140	43' 2"	1	1		5-31	3	B3	Cromwell, Minn. cmle	151
	152	"	" 834	"	"	"	"	"	"	"	"	"	"		4-31	3			152
	153	"	" 835	"	"	"	"	"	"	"	"	"	"		5-31	3			153
	154	"	" 836	"	"	"	"	"	"	"	"	"	"		3-31	3			154
	155	"	" 837	"	"	"	"	"	"	"	"	"	"		5-31	3			155
	156	"	" 838	"	"	"	"	"	"	"	"	"	"		4-31	3			156
	157	"	" 839	"	"	"	"	"	"	"	"	"	"		5-31	3			157
	158	"	" 840	"	"	"	"	"	"	"	"	"	"		5-31	3		Cromwell	158
	159	"	" 841	"	"	"	"	"	"	"	"	"	"		5-31	3			159
	160	"	" 842	"	"	"	"	"	"	"	"	"	"		5-31	3			160
	161	"	" 843	"	"	"	"	"	"	"	"	"	"		3-31	3			161
	162	"	" 844	"	"	"	"	"	"	"	"	"	"		4-31	3			162
4-04	163	"	" 992	4-04	"	"	BRILL 27-E-04	"	GE70	~~47,000~~ 49,200	45' 2"	2	1a	8-24	-39	3		Rebuilt to double-end 10-34	163
	164	"	"	"	"	"	"	"	"	"	"	"	"	8-25	10-37	3	D7		164
	165	"	"	"	"	"	"	"	"	"	"	"	"	8-24	11-37	3			165
	166	"	"	"	"	"	"	"	"	"	"	"	"	8-24	7-38	3			166
	167	"	"	"	"	"	"	"	"	"	"	"	"	8-25	11-37	3			167
	168	"	"	"	"	"	"	"	"	"	"	"	"	1-26	2-38	3			168
	169	"	"	"	"	"	"	"	"	"	"	"	"	1-26	1-27	4		Wrecked in Superior rail-	169
	170	"	"	"	"	"	"	"	"	"	"	"	"	2-28	5-39	3		road crossing accident	170
	171	"	"	"	"	"	"	"	"	"	"	"	"	2-28	-39	3			171
	172	"	"	"	"	"	"	"	"	"	"	"	"	3-28	3-39	3			172
	173	"	"	"	"	"	"	"	"	"	"	"	"	3-28	5-39	3			173
	174	"	"	"	"	"	"	"	"	"	"	"	"	4-28	3-39	3			174
	175	"	"	"	"	"	"	"	"	"	"	"	"	4-28	3-39	3			175
	176	"	"	"	"	"	"	"	"	"	"	"	"	5-28	4-39	3			176
	177	"	" 1037	"	"	"	"	"	"	"	"	"	"	6-26	2-38	3			177
1-04	178	"	" 1043	8-05	"	"	BALDWIN #1	"	"	~~48,200~~	"	3	1a	5-28	6-39	3	E4		178
6-05	179	"	" 1111	"	"	"	"	"	"	"	"	"	"	5-28	4-39	3			179
	180	"	" 1108	7-06	"	"	"	"	"	"	"	"	"	6-28	5-39	3			180
	181	"	" 1109	"	"	"	"	"	"	"	"	"	"		6-35	3			181
	182	"	" 1110	"	"	"	"	"	"	"	"	"	"		4-35	3			182
9-06	183	"	" 1196	6-07	"	"	" #5	"	"	51,520	46' 9"	4	2		6-35	3		First steel underframe	183
	184	"	"	"	"	"	"	"	"	"	"	"	"		-35	3	G6		184
	185	"	"	"	"	"	"	"	"	"	"	"	"		5-35	3			185
	186	"	"	"	"	"	"	"	"	"	"	"	"		8-35	3			186
	187	"	"	"	"	"	"	"	"	"	"	"	"		10-35	3			187
	188	"	"	"	"	"	"	"	"	"	"	"	"		-35	3			188
9-06	189	"	"	7-07	"	"	"	"	"	"	"	"	"		6-35	3			189
12-06	190	"	"	"	"	"	"	"	"	"	"	"	"		7-35	3			190
	191	"	"	"	"	"	"	"	"	"	"	"	"		6-35	3			191
	192	"	"	"	"	"	"	"	"	"	"	"	"		9-35	3			192
	193	"	"	8-07	"	"	"	"	"	"	"	"	"		6-35	3			193
	194	"	"	"	"	"	"	"	"	"	"	"	"		5-35	3			194
	195	"	"	"	"	"	"	"	"	"	"	"	"		6-35	3			195
	196	"	"	"	"	"	"	"	"	"	"	"	"		6-35	3			196
	197	"	"	"	"	"	"	"	"	"	"	"	"		5-35	3			197
5-08	198	"	" 1291	6-08	"	"	BALDWIN ~~TCRT~~ #5	"	GE213	47,900	46' 7"	5	3	5-30	5-35	3	I-1		198
	199	"	"	"	"	"	"	"	"	"	"	"	"	5-30	5-39	3			199
	200	"	"	"	"	"	"	"	"	"	"	"	"	4-30	5-39	3			200
	201	"	"	"	"	"	"	"	"	"	"	"	"	5-30	6-39	3			201
	202	"	"	"	"	"	"	"	"	"	"	"	"	4-30	7-39	3			202
	203	"	"	"	"	"	"	"	"	"	"	"	"	3-30	6-39	3			203
6-09	204	"	" 1360	7-09	"	"	TCRT #5	"	"	46,800	46' 8"	6	4	3-30	8-39	3		First of the triple-gate cars	204
	205	"	"	"	"	"	"	"	"	"	"	"	"	8-30	7-39	3	K2		205
	206	"	"	"	"	"	"	"	"	"	"	"	"	5-30	6-40	3			206
	207	"	"	"	"	"	"	"	"	"	"	"	"	7-30	6-39	3			207
	208	"	"	"	"	"	"	"	"	"	"	"	"	10-29	8-39	3			208
	209	"	"	"	"	"	"	"	"	"	"	"	"	6-30	7-39	3			209
	210	"	"	"	"	"	"	"	"	"	"	"	"	10-28	11-40	3			210
	211	"	"	"	"	"	"	"	"	"	"	"	"	11-28	6-39	3			211
	212	"	"	"	"	"	" #9	"	"	"	"	"	"	11-28	7-39	3			212
	213	"	"	"	"	"	"	"	"	"	"	"	"	9-28	7-40	3			213
	214	"	"	"	"	"	"	"	"	"	"	"	"	7-30	8-40	3			214
6-10	215	"	" 1380	6-10	"	"	TCRT #6	"	246	46,200	46' 8"	7	4	9-28	8-39	3	K8	@ 6,600 each	215
	216	"	"	"	"	"	"	"	"	"	"	"	"	9-28	9-39	3			216
	217	"	"	"	"	"	"	"	"	"	"	"	"	12-28	9-40	3			217
	218	"	"	"	"	"	"	"	"	"	"	"	"	12-28	4-39	3			218
	219	"	"	"	"	"	"	"	"	"	"	"	"	9-28	11-40	4			219
	220	INCLINE	"	6-11		1	TCRT Special			25,000	24' 0"	8			9-39	2			220
	221	"	"	"		"	"			"	"	"			9-39	2			221

	CAR NUMBER	TYPE	BUILDER	IN SERVICE	SINGLE/DOUBLE END see note 1		TRUCKS see note 2		MOTORS see note 2	WEIGHT see note 3	LENGTH OVERALL see note 4	GROUP see note 5 SPECIFICATION		DISPOSITION DATE	DISPOSITION CODE see note 6	REMARKS	
68	PASS.	LACLEDE	10-93	DE	1	BALTIMORE	2	WH 3	18,000	32' 9"				8-12	2		68
69	"	"	"	SE	"	McGUIRE	2	WH 3	"	"				6-10	1	Sold to Granite City Rwy.	69
70	"	"	"	"	"	"	2	SRG30	"	"				8-12	2		70
71	"	"	"	"	"	BALTIMORE	2	WH 3	"	"				6-10	1	Sold to Granite City Rwy.	71
72	"	"	"	"	"	McGUIRE	"	SRG30	"	"				7-12	2		72
73	"	"	"	"	"	"	"	WH 3	"	"		21	9	11-23	2		73
74	"	"	"	DE	"	BALTIMORE	"	"	"	"				9-10	4		74
75	"	"	"	"	"	"	"	"	"	"		21	9	11-23	2		75
76	"	"	"	"	"	McGUIRE	"	"	"	"				6-10	1	Sold to Granite City Rwy.	76
77	"	"	"	"	"	BALTIMORE	"	"	"	"				6-10	1	Sold to Granite City Rwy.	77
78	"	"	"	SE	"	McGUIRE	"	"	"	"				9-11	3		78
79	"	"	"	"	"	"	"	"	"	"		21	9	8-23	4	(see note 11)	79
80	"	"	"	"	"	"	"	SRG30	"	"				7-14	4	Wrecked and burned off 21st	80
81	"	"	"	"	"	"	"	"	"	"				7-12	2		81
82	"	"	"	"	"	"	"	"	"	"		21	9	11-23	2-3		82
83	"	"	"	"	"	"	"	"	"	"				7-12	2		83
84	"	"	"	"	"	"	"	"	"	"				7-12	2		84
85	"	"	"	"	"	"	"	"	"	"				4-17	4	(see note 12)	85
86	"	"	"	"	"	"	"	"	"	"				8-12	2		86
87	"	"	"	"	"	"	"	"	"	"				12-09	4	Inservice wreck	87
88	SUPPLY	DSR	-95	DE	"	"	"	"		21' 2"		108		7-35	4	(see note 9)	88
89	PASS.	BROWNELL	11-90	"	"	BROWNELL	"			24' 0"					5	(see note 19)	89
90	"	"	"	"	"	"	"			"					5	(see note 19)	90
91	OPEN PASS	"	4-91	"	"	"	TRAILER			25' 0"				6-02	1	(see note 20) 9 bench	91
92	"	"	"	"	"	"	*	"		"				6-02	1	(see notes 18 and 20) 9 bench	92
93	"	"	"	"	"	"		"		"				5-00	1	(see note 20) "	93
94	"	"	"	"	"	"		"		"				5-00	1	(see note 20) "	94
95	"	NORTHERN	9-92	"	2	BEMIS	2	SRG30		36' 10"				-04	4	~~(see note 18)~~ See 5.8 12 bench	95
96	FLAT #3	DSR	-07	"	"	DSR	4	GE70		42' 2"		105a		10-40	4	With 2 one-ton elect. hoists	96
97	" #4	"	-12	"	"	"	"	"		"		105		4-39	4		97
98	not assigned																98
99	PASS.	PULLMAN	-90		1	PULLMAN				21' 0"					3		99
100	PRIVATE	"	"		"					"					3		100
101	PASS.	STEPHENS.	"		"					24' 0"					3	Sold to Normal School for waiting station	101
102	"	"	"		"					"					1	Sold to Grand Forks Traction	102
103	"	PULLMAN	"		"					"					3		103
104	"	"	"		"					"					3	Sold to Lakeside Club	104
105	"	"	"		"					"				4-03	1	Sold to St. Cloud St. Rwy.	105
106	"	"	"		"					"					3		106
107	"	"	"		"					21' 0"					3	Sold to Lakeside Club	107
108	"	"	"		"					26' 0"				4-03	1	Sold to St. Cloud St. Rwy.	108
109	"	"	"		"					"				4-03	1	Sold to St. Cloud St. Rwy.	109
110	"	NORTHERN	10-92	SE	"	McGUIRE	2	WP30	15,000	27' 7"				6-06	1	Sold to Interstate Traction	110
111	PASS-TOWER	"	"	"	"	"	"	"	"	"				7-11	4	(see note 21)	111
112	"	"	"	"	"	"	"	"	"	"				8-12	2	(see note 21)	112
113	PASS.	"	"	"	"	"	"	"	"	"				10-10	1	Sold to Aberdeen Rwy. #5	113
114	"	"	"	"	"	"	"	"	"	"				8-10	4		114
115	"	"	"	"	"	"	"	"	"	"				9-10	1	Sold to Aberdeen Rwy. #6	115
116	"	"	"	"	"	"	"	"	"	"				5-11	1	Sold to Aberdeen Rwy. #9	116
117	"	"	"	"	"	"	"	"	"	"				6-06	1	Sold to Interstate Traction	117
118	"	"	"	DE	"	"	"	"	"	"					3		118
119	"	"	"	SE	"	"	"	"	"	"				10-10	1	Sold to Aberdeen Rwy. #4	119
120	"	ST. LOUIS	-93	"	"	"	"	"	"	"				10-10	1	Sold to Aberdeen Rwy. no number	120
121	"	"	"	"	"	"	"	"	"	"				10-10	3	6-06 to ITC 10-10	121
122	"	"	"	"	"	"	"	"	"	"				10-10	1	Sold to Interstate Traction	122
123	"	"	"	"	"	"	"	"	"	"				10-10	3		123
124	"	"	"	DE	"	"	"	"	"	"					4		124
125	"	LACLEDE	"	SE	"	"	"	"	"	30' 9"				10-10	1	Sold to Aberdeen Rwy. #1	125
126	"	"	"	"	"	"	"	"	"	"				10-10	1	Sold to Aberdeen Rwy. #2	126
127	"	"	"	"	"	"	"	"	"	29' 9"				5-11	1	Sold to Aberdeen Rwy. #10	127
128	"	"	"	"	"	"	"	"	"	30' 9"					4		128
129	"	"	"	"	"	"	"	"	"	29' 9"				10-10	1	Sold to Aberdeen Rwy. #3	129
130	"	"	"	DE	"	"	"	"	"	30' 9"				8-12	2		130
131	PASS.-SUPY	AMER. CAR	-94	"	"	"	"	"	18,000	33' 4"		21		6-31	4	Converted to supply car 9-20	131
132	PASS.	"	"	"	"	"	"	"	"	"				6-12	2		132
133	"	"	"	"	"	"	"	"	"	"				6-12	2		133
134	"	"	"	"	"	"	"	"	"	"				8-12	2		134
135	"	"	"	"	"	"	"	"	"	"				8-12	2		135
136	"	"	"	"	"	"	"	"	"	"				5-13	4		136
137	SNOW SWPR.	T.H.ELECT.	1-91	"	"	"	4	WP50		27' 6"					4	(see note 18)	137
138	"	"	"	"	"	"	"	"		"					4	(" " ")	138
139	PLOW #1	DSR	'98-02	"	2	BRILL*	"	GE70		41' 6"		102		4-39	4	*Re-equipped with GE216 mot-	139
140	" #3	"	-06	"	"	"	"	"		"		102		4-39	4	ors & TCRT #9 trucks 12-17	140
141	WRECKER	TCRT	6-11	SE	"	DSR	"	"	52,710	38' 5"		101		10-40	4	With 8-ton electric crane	141
142	FLAT #5	DSR	4-17	"	1	McGUIRE	2	SRG30		21' 0"		109		7-35	4	(see note 12)	142
143	" #6	"	7-17	"	"	"	"	"		"		109		4-38	4	(see note 12)	143
144	" #7	"	7-17	"	"	"	"	"		"		109		4-39	4	(see note 12)	144
145	" #8	"	7-17	"	"	"	"	"		"		109		4-39	4	(see notes 10 and 12)	145
146	PLOW #4	TCRT	11-17	"	2	TCRT #9	4	GE73	64,320	36' 8"		103		4-39	4	(see note 22)	146
147	PASS.-PLOW #5	LACLEDE	note 23	DE	1	McGUIRE	2	WP30		32' 9"		106		6-31	4	(see note 23) Replaced by GE67 in 1922	147
148	TOWER #3	NORTHERN	note 24	"	"	"	"	"		27' 4"		107		6-31	4	(see note 24)	148
149	not assigned																149
150	not assigned																150

Cars 99 through 136 were acquired from SRTR in the 1900 merger. All were originally narrow gauge cars.

Trolley Buses

CARS OF DSR

(see also 2.36 for ~~DD~~ cars)

1 Sold to other cos
" " Salvage
" for cottages, etc private
4 Scrapped, dismantled
5 ?

4.59
5.60a

	CAR NUMBER	TYPE	BUILDER	IN SERVICE	SINGLE-DOUBLE END see note 1		TRUCKS see note 2		MOTORS see note 2		WEIGHT see note 3	LENGTH OF BODY LENGTH (OVERALL) see note 4		GROUP see note 5 SPECIFICATION	DISPOSITION DATE	DISPOSITION CODE see note 6	REMARKS	
1	~~PASS.~~ Closed horse car	From St. Paul City Rwy	7-83	SE	1		* Predecessor companies in Woodland, Superior and Park Point also had cars numbered variously from 1 to 6. Some of these were renumbered into DSR's roster at a later date. (See 5.7, 5.36, 5.37, 5-38.)		6,000		*17'00"				11-90	1	Sold to MPSR 12-91 $200	1
2	"		"	"					"			12' body			"	5	(Two unidentified horse cars sold to MPSR 12/90 for $250 each)	2
3	"		"	"					"		"	"			"	5		3
4	"		~~1-86~~	"	1				#6,000		"	"			8-90	1	Sold to MPSR 8-90 $100	4
5	"	John Stephenson Co.	~~4-86~~	"					"		"	16'			11-90	1	Sold to MPSR 5-92 $90	5
6	"	"	"	"					"		"	"			"	5		6
7	"		"	"					"		"	"			"	1	Sold to MPSR 5-92 $90	7
8	"		"	"					"		"	"			"	5		8
9	"		"	"					"		"	"			"	5		9
10	"		"	"					"		"	"			"	1	Sold to MPSR 5-92 $90	10
11	"		"	"					"		"	"			"	5		11
12	"		"	"					"		"	"			"	5		12
13	"		"	"					"		"	"			"	1	Sold to MPSR 5-92 $90	13
14	"		"	"					"		"	"			8-90	1	Sold to MPSR 8-92 $400	14
15	"		"	"					"		"	"			11-90	5		15
16	"		5-88	"					"		"	"			"	5		16
17	"		"	"					"		"	"			"	5		17
18	"		"	"					"		"	"			"	5		18
19	20 Closed PASS.	LACLEDE	10-90	DE	1		Hubbard C'	2	F30	15 h.p.	12,500	16'	25' 6"	width 7'9"		1	Sold to Grand Forks Transit	19
20	"	"	"	"	"		"	"	"	"	"	"	"			3		20
21	"	"	"	"	"		"	"	"	"	"	"				3		21
22	"	"	"	"	"		"	"	"	"	"	"				3		22
23	"	"	"	"	"		"	"	"	"	"	"				4		23
24	"	"	"	"	"		"	"	"	"	"	"				3		24
25	"	"	"	"	"		"	"	"	"	"	"			6-06	1	Sold to Duluth Belt Line Ry.	25
26	"	"	"	"	"		"	"	"	"	"	"			10-07	3	T.M. Madden $20 each	26
27	"	"	"	"	"		"	"	"	"	"	"				3	" " "	27
28	"	"	"	"	"		"	"	"	"	"	"			6-06	1	Sold to Duluth Belt Line Ry.	28
29	"	"	"	"	"		"	"	SRG30	"	"	"				3	Operated on Highland Ave.	29
30	"	"	"	"	"		"	"	F30	"	"	"			9-93	4	(see note 8) went into Tunnel	30
31	26 "	"	3-91	"	"		BEMIS 7'	"	SRG30			"		7'9"	-95	4	(see note 9) 2@$1141	31
32	"	"	"	"	"		"	"	"			"				4		32
33	"	"	"	"	"		"	"	"			"			4-03	1	Sold to St. Cloud St. Rwy. ~~4-03~~	33
34	"	"	"	"	"		"	"	"			"			11-94	4	Burned in Woodland carhouse fire 11-16-94	34
35	"	"	"	"	"		"	"	"			"				4		35
36	"	"	"	"	"		"	"	F30			"			4-03	1	Sold to St. Cloud St. Rwy. ~~4-03~~	36
37	"	"	"	"	"		"	"	SRG30	15 h.p.		"				4		37
38	26 "	"	7-91	"	"		McGUIRE #21	"	"		15,500	18'4"	29' 3"	8'0"		3		38
39	"	"	"	SE	"		"	"	"		"	"			5-15	1	Sold to Duluth Belt Line Rw.	39
40	"	"	"	"	"		"	"	"		"	"			1-13	3	Trucks @ $225	40
41	"	"	"	DE	"		"	"	"		"	"			5-15	1	Sold to Duluth Belt Line Rw.	41
42	PRIVATE	"	"	"	"		"	"	"		"	"	29' 4"		7-17		"St. Louis" (see note 10)	42
43	does PASS.	"	"	SE	"		"	"	"		"	"	29' 3"		1-11	4	Burned at Highland 1-29-11	43
44	26 "	NORTHERN	"	"	"		"	"	"		"	"	29' 11"	9'10"	4-12	2	Trucks @ 225	44
45	"	"	"	"	"		"	"	"		"	"	"		4-12	2		45
46	"	"	"	"	"		"	"	"		"	"	"		6-11	1	Sold to Aberdeen Rwy.	46
47	30 "	LACLEDE	5-92	DE	"	1'6"	"	"	"		18,000	22'	32' 9"	21	9	8-23	4 (see note 11)	47
48	"	"	"	"	"		"	"	"		"	"	"	8'0"		4-12	2	48
49	"	"	"	"	"		"	"	"		"	"				7-17	4 (see note 12)	49
50	"	"	"	"	"		"	"	"		"	"				7-17	2	50
51	PASS.-TOWER	"	"	"	"		"	"	"		"	"		21		8-23	4 (see notes ~~13~~ 11 & 13)	51
52	does PASS.	"	"	"	"		"	"	"		"	"		21	9	7-31	3 (see note 14)	52
53	"	"	"	"	"		"	"	"		"	"		21	9	11-23	2	53
54	"	"	"	SE	"		"	"	"		"	"				4-12	2	54
55	"	"	7-92	DE	"		"	"	"		"	"				4-12	2	55
56	"	"	"	"	"		"	"	"		"	"				4-12	2	56
57	"	"	"	"	"		"	"	"		"	"				7-31	3 (see note 14)	57
58	"	"	"	"	"		"	"	"		"	"				4-12	2	58
59	"	"	"	"	"		"	"	"		"	"		21	9	11-23	2	59
60	"	"	"	"	"		"	"	"		"	"				5-12	2	60
61	"	"	"	"	"		"	"	"		"	"				7-17	4 (see note 12)	61
62	PASS.-SUPPLY	"	"	"	"		"	"	"		"	"		21		11-23	2 (see note 15)	62
63	INCLINE	TCRT	1-02		2		Peckham ~~TCRT~~ 7B	4	GE67		28,000		22' 3"	8'4"	5-11	6-11	3 (see note 17)	63
64	FLAT #1	DSR	-01	DE	2		DSR	4	GE67				42' 2"	105	4-37	~~4-36~~	1 (see note 16) to Interstate Mining Co. Calumet, Minn.	64
65	" #2	"	-02	"	"		"	"	GE70				"	8'6" 8'6"	105	4-38	4	65
66	PLOW #2	"	-03	"	"		"	"	GE67			24'0"	41' 6"	8 8	102	4-39	4	66
67	TOWER #1	"	-04	"	"		BEMIS	"	"				30' 4"	8'	104	4-33	4 (see note 16) ~~(see note 18)~~	67

Put bracket to note on right

Move to left

Use as note 7

3 horse car sold to Belt Line B&LR 5-1900

" " " " Twin City Rapid Transit Co. Ironwood, Mich. Sept 1901

#130

* To Lakeside 12-1-92

MINNESOTA STREETCAR MUSEUM

The Minnesota Streetcar Museum is a non-profit, all-volunteer organization with the mission to preserve and communicate to the public the experience of Minnesota's electric street and interurban railway history. To accomplish this mission the Museum operates historic streetcars at two demonstration railways.

COMO-HARRIET STREETCAR LINE

Excelsior Streetcar Line

For more information on our Museum, our collection of historic streetcars and our demonstration railways, visit our website:

www.trolleyride.org

The museum's business address and telephone number is:
P.O. Box 14467, University Station
Minneapolis, MN 55414-0467
952-922-1096

Streetcar CURRENTS
May 2008

Jim Vaitkunas—Editor
Bill Graham—Distribution

Streetcar CURRENTS is a periodic newsletter for the members and friends of the Minnesota Streetcar Museum.

Deadline for submitting items for the next issue of the **Streetcar CURRENTS** is May 20, 2008.

Please send items to editor Jim Vaitkunas at the following address:
155 Chaparral Dr.
Apple Valley, MN 55124-9774
You can send input or enquiries by e-mail to: jvaitkunas@msn.com

From the Front Platform

Dave French — Board Chair

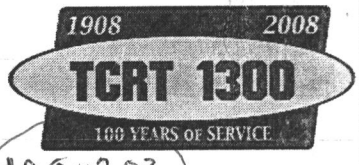
Hello again! Spring *just may* be finally arriving. This has actually been a pretty normal winter but our recent series of wimpy winters makes this one seem particularly long and dreary. If you're like me you probably can't wait to get out on the line running one of our beautiful cars and interacting with our customers on a fine warm day. I remind you to not let the excitement distract you from running the line safely. In everything you do, safety must come first.

I'm very excited about this year at MSM because there is a lot going on, both on the line and behind the scenes. One thing that is particularly intriguing to me is the installation of the Wirth Park streetcar shelter on the north end of our Lake Harriet line. For years I've sat in the back of the car during the end-of-line speech while serving as Conductor and watched dozens of people go by while they walk, run, or bike around Lake Calhoun. I've always dreamed for more of these people to stop and walk across the street and take a trolley ride. To me the north end is the great untapped source of potential new riders that is available to us. The shelter will make us much more visible and be more inviting to potential passengers. It will give them shade and a place to sit while they wait for the car. Once the shelter is in place, I plan to come over for some shifts and serve as an unofficial fifth crew member at the shelter. I want to see if being there in my uniform to answer questions, sell tokens, and perhaps assist families with crossing the street will attract more people to check us out. Hopefully I can get a few paying customers and ask them if they had planned riding today or is this a spur of the moment decision because they saw me and the shelter. I might even wander across the street and see if I can talk to people and sell a ride. Given the difficulty to fill all shifts during the month, it may not be realistic at this time to think we could have a crew of five on a regular basis but perhaps it could be an option for weekends and special events. That's my dream for this month and it just might come true. What are *your* dreams and ideas for MSM? I'd love to hear them!

TCRT No. 1300 History

Russ Olson—MSM Historian

No. 1300 was part of an order of 19 cars, numbers 1291-1309, built in the Snelling Shops, St. Paul, March-May 1908. The cars in this series were faster cars ordered for a planned cut in the running time on the "Interurban" line (St. Paul-Minneapolis). This was the first group of cars to have 34" steel wheels. No. 1300 was completed April 9, 1908, and assigned to Snelling Station, St. Paul.



Class I-1-f-213 — Length 46' 7 1/8", width 9' 2 1/2", height 11' 5". Baldwin #5 trucks (6'0" wheelbase). Four G.E. 213 motors (50hp each), gear ratio 15:71. K-37-A controller. G.E. CP-21 air compressor, one 10" brake cylinder. G.E. R.B. trolley base, 7" trolley wheel. Peter Smith heater. Arc headlight. Weight 47,800 pounds. Hinged motorman's cab door, two pair rear gates.

At Snelling Station No. 1300 was operated on the "Interurban" (St. Paul-Minneapolis) line for many years. We don't know on which other lines it may have been operated. On April 21, 1920 it was one of eight cars transferred to Lake St. Station, Minneapolis. On August 2, 1921 it was one of nine cars transferred to Snelling Station. During August 1921 TCRT decided to put newly rebuilt front-exit cars on all the inter-city lines which required extensive transfers of cars among the various car stations. On September 1, 1921, cars 1289-1330 were transferred to Duluth Ave. Station, St. Paul (Nos. 1331-1332 transferred later). These 44 cars were then equipped with front marker brackets for "St. Paul-Wildwood" service on the Stillwater Division.... To be continued.*

All cars seem to have closed platforms by 1-1-08

3.1
307 | 960.
921
390

~~Helen 411 South St.~~

7807 E. Main C35 480 986 8694
681-6356
5709 W. 157th Pl 66223-
Morgan Mueller 8316 913 648-6297
407 277 2418
7133 Jugarbin 32822-5812

Paragraph in 43 Superior: SRTR to DSR
All single truck cars had longitudinal seats
check length of st cars pp 27
pp 9 The Superior mgmt is at the mercy of
run down construction & equipment.
pp 3 "40 of the stiff-riding McGuire
trucks should be provided w/ "Baltimore
Elliptical springs."

Interstate	96	So Sup.	11
W Dul/Lake Ave	15	Incline	7
East End Sup	29	Park	5
Lakeside	25	Broadway	2
4th St	21		307
Grand Ave	13		pp 45
Woodland	12		
Tower Ave 3/21	11		

~~Although~~ Many streets of that
era utilized cars, called "bobtails",
those that had front platforms only, with
only a ~~door~~ step and a door at the
rear. ~~D&R's horsecars had~~

6 horses were purchased
from a Mpls dealer for $140 each.
~~These~~ seem in July ~~1889~~ 1889.
These seem to be the last
horses purchased

SECTION 5

PASSENGER CARS

DSR passenger cars were numbered in an uninterrupted series from 1 to 305.

Although it might seem logical to list the cars in chronological or numerical sequence here, it proves more advisable to deviate slightly from this course in some instances, instead, and list the cars by groups.

Unlike most railways and some street railways (including TCRT), DSR did not generally refer to or utilize classifications for its various types of passenger or service cars. In about 1915 DSR began to use a group or type classification, primarily, it seems for accounting purposes, and not for operations, identification, maintenance or modification purposes, as generally used elsewhere. TCRT's classification of cars offers an excellent means of grouping cars of differing specifications, and this information is shown on Table 5.60 (see also 5.15).

5.1 1-4, 5-15, 16-18 18 cars. Horse cars. The first cars that operated in Duluth (1883-1890), were 4-wheel, narrow-gauge horse cars, weighed 60,000 pounds, were only 17 feet long over all, 12-foot bodies, five windows and a longitudinal seat on each side. Small open platforms were at both ends of the car, the front platform just large enough for the 'driver' to stand in. The cars were single end; in other words it was necessary to turn the cars at the end of each half trip. Provisions were made for mounting a stove in the right front corner of the car in the winter.

'Horse car' was the all-inclusive term of the animal-power era. Though DSR used mules instead of horses, our references here will be the more general term 'horse car' (see 5.40).

Not much is known of circumstances surrounding the acquisition and nature of DSR's first horse cars. However, railroad freight bills ($30 per car) and DSR ledger entries indicate that the first four cars were purchased from the St. Paul City Railway (SPCR). Ownership of SPCR passed from a New York City (absentee) ownership to a St. Paul (local) ownership on February 11, 1882. The first of these cars arrived in Duluth on November 22, 1882 via the St. Paul & Duluth Railroad (StP&D), having been billed from SPCR the previous day. Four days later the DULUTH TRIBUNE reported the car "...was placed on tracks at 5th Ave. W. (and Superior St.) in front of a paint shop."

A.B. McLean & Co.-who were in the process of constructing the street railway tracks at this time-had a repair shop at or near this location, at which, it appears, reconditioning of the cars was undertaken. A DSR ledger entry, "Paid A.B. McLean & Co. one car complete $30.80." probably refers to reconditioning of one of these cars, all of which, obviously, were second-hand cars.

A March 17, 1883 DSR ledger entry records, "Paid St. Paul City Railway Co. for one car SPCR No. 12...$200." Three more cars were obtained from SPCR for $150 each. These cars were apparently unloaded at the StP&D freight house/yard at 5th Ave. W. and hauled up the hill to Superior St. "...near the Windsor House" where they remained out of doors the Winter/Spring of 1882-83. In the NEWS several days later, a Theodore Dreiser observed, "They are flimsy affairs, these cars, merely highly-varnished kindling wood with bits of polished brass and glass stuck about them..." This was, perhaps, a bit of unjustified criticism, for on June 30, a few days before operation of the cars began, the DULUTH TRIBUNE reported, "One of the street cars which was drawn along the tracks from Lake Ave. to the company (shop) attracted considerable attention yesterday. They are good looking cars."

Horse car operation, 8th Ave. West to 3rd Ave. East, began July 6. (see also 2.1).

In anticipation of the extension of tracks to East End (see, also, 2.2), two new cars, numbers 5 and 6, were purchased-for $725 each-in April 1886-some accounts show June 19, 1884-from John Stephenson Co. of New York City. These were followed immediately by nine more, numbers 7 to 15. Fifty mules were obtained at the same time to pull these cars. Three more cars, numbers 16 to 18, and 48 mules were added in May 1888 for the extension of tracks to 22nd Ave. E.

These 18 cars, which are recorded, more nearly correspond with brief company records, and seem more logical (for four miles of track) than newspaper accounts referring variously up to 40 cars (ten cars per mile of track!). The questionable accounts probably referred in error to mules instead of cars.

and 5.10

Please see 4.12a for maintenance, repair and operation of horse cars.

5.2 19-30, 31-37 19 cars. First two groups of electric cars.

Its franchise problems with the city fathers resolved on April 28, 1890, (see, also, 2.4) DSR went quickly about the task of simultaneous electrification, conversion to standard gauge and purchase of the first electric cars. Narrow-gauge horse cars were not normally adaptable for conversion to standard gauge electric cars (contrary to contemporary newspaper reports), primarily because of their small size, narrow bodies, light-weight construction, and pedestal-type wheel mounts which did not lend themselves well to electric motors, heavier, geared axles, and larger wheels.

An 1892 book published by the Street Railway Journal indicates that, even at that early time, there were several options for purchasers of electric street cars. The purchaser could: 1) select from a car builder's standard designs—off-the-shelf buying, so to speak. 2) furnish his own drawings and specifications to the car builder. 3) submit his needs to the builder who would prepare the drawings and specifications. What course DSR/SRTR took seems uncertain.

DSR bought its first group of electric cars, numbered 19 to 30, from Laclede Car Co. in St. Louis, an excellent choice...cost $875 each, fob St. Louis. The cars, rugged and well-built, were purchased in September 1890, preparatory to electrification, and they began operating in Duluth on November 8. These were 25 1/2-foot single-truck closed cars, 7'6" wide inside, 16-foot bodies, six windows each side, and seating approximately 20 passengers on longitudinal seats. Wheel base of the McGuire A 60 Hubbard trucks was six feet. These and all single-truck cars purchased thereafter by DSR, were double-end cars, cars that could be operated from either end, and did not need to be turned at the end of each half trip. Typical of the period, there were identical open platforms at both ends of the cars, each being 3 1/2 feet long, and provided with chain restraints across the platform openings to protect passengers and crew from falling off the car. The crews' only protection from the elements was an overhanging roof and a waist-high dashboard, called a dasher. The two 15-horsepower motors were controlled by a goose-neck crank on each platform, connected by chains and sprockets to an under-floor rheostat. A second crank handle operated the hand brakes. six months later, 29 was modified by ~~SRT~~ for ~~W&SR~~ non-std duel service

A second group, seven cars, numbered 31 to 37, was purchased from Laclede in March 1891. These were identical to those purchased the previous year, except that they had Bemis trucks of 7-foot wheel base, which provided improved riding qualities.

27 ~~28~~ 27 Began Sept '92 to relieve open summer cars (see 5.8)

5.3 38-43, 44-46 9 cars. Third and fourth groups of electric cars. The EAST 4th STREET line was extended twice in 1891, and the ONEOTA-WEST DULUTH line was completed by fall of that year. To equip these lines, a third and fourth group of closed cars were purchased that year. ~~In July~~ Six cars, numbered 38 to 43, and three cars numbered 44 to 46, two groups of cars, 9 in all, were quite similar to the first two groups except that they were 29'3" and 29'11" long respectively, with seven windows on each side, and seating approximately 26 passengers. The cars were equipped with the much-improved McGuire #21 truck with 7'6" wheel base, and two 15-horsepower motors. A coal stove was mounted in the center of one side of the car in the winter. The first six cars of this series were built by Laclede for $900 each. The last group was built by Northern Car Co. of Robbinsdale (Minneapolis) for $1100 each, on a contract dated April 11, 1891. ~~delivered in July.~~ In March 1891 Both groups went into service in July 1891.

were delivered in July. These Car bodies were 18' 7" long

Both groups had open platforms

~~At some unknown time,~~ car 42 was shipped to SPCR shops for major modifications and returned to DSR for use as a private car (see 5.57b)

5.4 47-62 16 cars. Group 21 Spec 9. Larger single-truck cars. In preparation for the opening of the GARFIELD AVE. and LAKE AVE. lines in September 1892, and the LAKESIDE line in December, all of which promised to be heavily traveled lines, DSR contracted in February of that year, for the purchase of 16 large, 31-foot (32'9" over bumpers), 30-passenger closed cars from Laclede. In most ways, these were merely larger versions of the cars purchased the previous year. The cars had now reached the maximum practical length for singe-truck cars. They weighed 18,000 pounds, were 6'10" wide inside, ~~and~~ 7'7" outside ~~(8' over all)~~. and Cost: $925 each fob Duluth.

The 16 cars were delivered in May, June and July. Soon after its arrival, car 51 was converted from a passenger car to a tower car (see also 6.10). Then, in

and 22' long

wide inside and 32'9" long

... mystery. Laclede Car Co. built a custom-designed 4-wheel closed car in 1892 for operation on the Incline, and which DSR numbered 63. Perhaps

August 1923, the motors and controller were removed, and it became an ash car trailer. (see also 5.44). Car 62 was rebuilt as a supply car in 1915 (see 6.12).

5.5 CARS FOR THE LAKESIDE LINE. DSR and Lakeside Railway Co. (LR) entered into a joint agreement on September 1, 1892 to "...build, operate and maintain...a street railway...to and within Lakeside..." from a connection with DSR tracks at 22nd Ave. E. The agreement makes no reference to passenger-carrying equipment to be utilized when leasee DSR began operation of the line on December 17. Promoters of the Highland project, being built at approximately the same time, and the Hunters Park/Woodland project, which had become operational a year earlier, had made provisions of a sort to obtain and utilize their own cars.

DSR ordered 16 cars from Laclede Car Co. on January 9, 1892 (see 5.4). These were delivered in May-July, and were numbered 47-62.

DSR's next group of cars arrived more than a year later. This group of 20 cars were numbered 68-87.

Why DSR left this gap--63-67--in its quite-consistently chronological car-numbering series is not known, and remains a mystery. Perhaps there were plans for five cars to be obtained for LAKESIDE or other operations, and, perhaps this gap in the DSR numbering series was intended for those assignments. But for reasons not known, this never happened.

(From his extensive and thorough research, Russ Olson, author of THE ELECTRIC RAILWAYS OF MINNESOTA, concludes that the four second-hand Laclede-built cars acquired for the Park Point operations in May 1899, numbered 1-4, may quite probably have been destined originally for the LAKESIDE line.)

DSR acquired LR in October 1900, and the five numbers in the series were assigned to a variety of equipment thereafter.

A December 17, 1892 DSR ledger entry shows six DSR cars, 30, 39, 40, 44, 45, 46, sold to Lakeside Railway on December 1. These probably were the cars available for LR's December 17 start-up operation. The cost of $16,800--$2,800 each--seems a rather high price for these cars. (Please see also 2.10).

By an agreement with LR, DSR became operator of the line. However, the car ownership status at that time is also puzzling inasmuch as modifications of the cars, for instance, such as 1894 legislatively-ordered closed vestibules, were performed in the Superior shops of Superior Rapid Transit, instead of in DSR shops.

5.6 68-87 20 cars. Group 21 Spec 9. Final group of single-truck cars. DSR obtained its final, and largest, group of single-truck cars when twenty were delivered by Laclede in August 1893. The McGuire trucks had arrived in May; these cars went into service in October. The cars were 22' long inside, 32'9" long outside.

This group of closed cars came equipped with semi-enclosed platforms, a considerable improvement over the until-then traditional open platforms on cars procured previously, and ameliorating the appearance and utility of the cars.

Car 87 was the last in the original numbered series of DSR single-truck cars which began with car 19. Sixty-four of these second-generation cars were purchased in the ~~three~~ four years, 1890-1893.

5.7 89-90, 91-94 6 cars for the WOODLAND line. Two 24-foot, closed, single-truck cars were ordered in July 1890 by MLI from Brownell Car Co. of St. Louis, and arrived on November 11. DSR used the cars on its own lines from the time of their arrival until MLI was ready to use them on its WOODLAND line which began revenue operations April 28, 1891 (DSR ran up over 5,000 miles per month on these cars!...at the leased rate of $.026 per mile). These two cars were originally named 'Woodland' and 'Duluth', were painted MLI's dark red color, but were renumbered 89 and 90 respectively when acquired by DSR at some unknown, ~~later~~ date, but were retired ~~by 1900~~. at an unknown date.

MLI indicated, on July 8, 1890, that it planned to buy two more large cars. An order was placed instead for four open (summer car) trailers. In later years, open cars were commonly referred to as 'breezers'. These were obtained from Brownell on April 6, 1891; 9-bench, four-wheel cars, 25 feet long, and originally bore MLI numbers 1 to 4. All six cars had 7' wheelbase Brownell trucks. DSR purchased the four trailers from MLI in December for $800 each, and renumbered them 91-94.

Because of Duluth's hilly topography, DSR was well aware of the hazards and difficulties associated with the operation of trailers; DSR made no other purchases of trailers (see 4.9). MLI's purchase of the four trailers proved to

be an unwise, unfortunate decision that was to create immediate and extended operating problems for MLI and DSR (see 4.30). Two years later, in June 1893, trailer number 2 (92) was motorized, in DSR's shops, with truck and motors from car 30, for use on the GARFIELD AVENUE line.

However, probably because of DSR's disenchantment with open cars, this group found its way to Interstate Traction (Park Point), cars #1 and #2 in May 1900 for $250 each--DSR had spent $198 each to recondition and paint them for service on Park Point--and the other two in June 1902 for $300 each, where one of them, car #2, eventually was converted to the Park Point fire car (see ~~6516~~). At some unknown time, the cars' MLI numbers 1 to 4 were changed to 91-94 to fit into DSR's revised car-numbering system.

5.8 95 DOUBLE TRUCK OPEN CAR FOR HIGHLAND AVE.

Thomas (Tom) Lowry, general manager of the Minneapolis Street Railway, had a considerable interest in Highland Improvement Co. at the time of its inception (see also 2.8). So, it is logical to assume that he was instrumental in obtaining a large, open (summer) street car for the HIC operation. This was one of several schemes utilized by HIC to attract potential buyers for its real estate development project along Highland Ave. which was then a summer-time-only operation.

Northern Car Co. built 12 double-truck, double-end, 12-bench, 36'10", open, motor cars for MSR in April/May 1892, which were numbered 540-551. These had Bemis MT trucks, two TH WP50 (25 horse power) motors. One of these, 548, ~~seems to have been~~ was shipped to HIC, and went into service on the HIGHLAND line on September 27. When built, 548 was a single-end car. At some point in time--between its construction and assignment to HIGHLAND AVE.--it was converted from a single- to a double-end configuration, suitable for HIGHLAND AVE.'s shuttle-type operation.

The freight bill identified the car as #67. However, probably when DSR took over operation of the HIGHLAND line two days later, the car's number was changed to 95, which fitted nicely into DSR's numbered series open cars.

This impressive-looking car, Duluth's first and only double-truck, open car, was ill-suited for Duluth's climate, ~~probably~~ operated for a very short period of time, and was ~~eventually~~ retired, in June 1894, when DSR inherited/acquired HIC's meager, remaining assets. Interestingly, DSR was still buying single-truck cars for its own lines at this time, not yet economically able to afford the luxury of double-truck cars. (See ~~also~~ 6.8 for disposition of this car).

As an aside, at some unknown time, DSR 29 replaced 59 on the HIGHLAND AVE. line. ~~in September 1892 with winter in the offing.~~ Until DSR's acquisition of the line, this was a summer-only operation.

5.9 PLANS FOR DOUBLE-TRUCK CARS In a letter to Vice-President Goodrich, dated April 15, 1897, General Manager Herbert Warren wrote, "We have not, as yet, decided whether we will build our cars or purchase them. I believe we can build car bodies...very plain cars...and we would give particular attention to strength and durability."

DSR was in need of more cars; it had been four years since it had obtained its last cars, a period of severe economic decline. But post-depression days had arrived. The DULUTH HERALD of June 20, 1899 had this to report, "It is the intention (of DSR) to begin the construction of big double-truck cars within a short time....The cars will be built at the company's shop in the West end, except for motors and trucks."

Single-truck (4-wheel) cars had grown in size until they had reached their ultimate practical length. The next step to larger and longer cars was to double-truck (8-wheel) cars, which were introduced in St. Louis in 1890, and had already become quite well established on trolley operations elsewhere.

However, DSR was in receivership at this time, and, notwithstanding a need for more cars, was not financially able to buy or build large cars--nor any kind of cars, for that matter.

Duluth, Superior, the Twin Cities, Winnipeg and other northern cities had long been dissatisfied with the cars that were available from car builders of that era. Among other things, they were not sufficiently insulated or heated for severe winter service. And, though open platforms were accepted and standard style nation-wide and industry-wide, they were somewhat less than desirable or comfortable for passengers and crews during the Minnesota winters. When electrification increased car speeds, the cruel exposure became a source of strong public sentiment, and legislative action followed to have the platforms enclosed (see 5.41).

But momentous events were to quickly change the whole picture. TCRT's Tom Lowry's financial dealings rescued DSR from bankruptcy on August 12, 1900, and released DSR from receivership. On the following day, SRTR was consolidated with DSR.

The DULUTH HERALD of August 27 gave this account, "The improvement of the street railway under the new ownership is to come at a very early date...The introduction of the double-truck cars will come within a reasonable short time. All the new cars...bought by the company in the future will be of the double-truck variety." 1900

At a September 30 DSR board meeting, authorization was given for the purchase of twelve new double-truck cars from TCRT. Duluth's population had grown to a vigorous 53,000. With a prosperous future upon them, DSR management was fortunate, indeed, to be able to obtain cars on a par with those being operated in the Twin Cities.

TCRT had established specifications and had collaborated in 1892 with Northern Car Co. and American Car Co. for construction of cars more suitable than what were then available. The cars those builders produced in early 1892 did not yet satisfy TCRT; the cars were soon back in TCRT shops for modifications. Unfortunately, however, a disastrous fire in May put Northern Car Co. out of business. It was at this point that TCRT decided to design and build their own cars. Apparently TCRT's development of a car progressed well thereafter, a car of its own style and specifications; and was so satisfied with the first two cars built, in early 1898, that 20 more were built later that year.

The car which evolved from this research and development formed the mold which was to produce a characteristically TCRT-style of car. Perhaps it would be unfair to accuse TCRT of architectural economy or spartan tendencies, but it is obvious that the cars were designed with priorities on utility and comfort along functional lines—form follows function!—very much unlike most of the cars produced during that era, whose builders seemed to delight in both exterior and interior embellishments: colorful woodwork and enamels, ornate hardware and fixtures—even stained-glass windows.

In the March 15, 1910 announcement that the 7th Ave. W. INCLINE was to be rebuilt and equipped with new cars built in TCRT shops, DSR General Manager Herbert Warren made this observation, "There is no better street car built than those built by the TCRT Co., and the local street railway company is fortunate indeed in being able to get its cars from the shops of that company."

The car building program grew rapidly, and soon outgrew the 31st & Nicollet facilities. In 1906 car building was moved to the vast, well-equipped Snelling shops in the Twin City Midway district. 1360 excellent cars were eventually built in TCRT shops by its fiscal subsidiary Transit Supply Co. and Light Weight Noiseless Electric Street Car Co., one of the largest operating-company builders in the nation. Established to produce cars for its own organization, the shops did also, through the years, build most of the cars for DSR and some for Chicago, Nashville, Chattanooga and others. TCRT had built over 100 cars by the time it received DSR's first order.

The only changes of major consequence through the years were improvements in the electrical and mechanical equipment, lengthening of the platforms, and the eventual substitution of steel for wood in the underframe.

Besides their greater size (48 passengers vs 36 in the larger 4-wheel cars), there were other features on the new cars to gladden the heart of passengers, management and crew. The EVENING TELEGRAM of November 5, 1900, reporting on the cars being built for DSR in the TCRT shops, stated: "(The cars) have cane-bottomed (rattan) seats, the forward part of the cars having railroad coach style (seats), and the rear end having longitudinal seats. On each window jam is a little pearl button, which, when pressed, rings a bell in the (motorman's cab)." But of greater consequence was the design of the platforms—a considerable departure from the accepted and traditional forms. The front (motorman's) cab was completely enclosed, with doors to both the outside and interior of the car. It was here that the coal-fired stove for the hot-water heating system was located—readily accessible for easy care. The spacious rear platform was closed on three sides, and permitted quicker loading and unloading of passengers, with minimum discomfort to those on the inside in cold weather. This was aided also by a platform height of only 34 1/2 inches above street level. This flow of passengers lent itself well to implementation of PAYE plans years later (see 4.11). The lower window sashes could be dropped into the sidewall in mild weather. Protective window guards/screens were provided in Summer; storm sash in

Winter.

Surprisingly, though the cars were quite advanced mechanically, the first 12 cars were equipped originally with only hand brakes, and were, therefore, not assigned initially to any of the hill lines. Pumps, controls, cylinders, brake rigging, and other related air brake appurtenances were added two years later, in Spring 1903.

Within the same groups, TCRT cars and those built by TCRT for DSR were, for the most part, identical. However, there were two minor differences: DSR cars had larger fenders which could be dropped in an emergency situation. DSR used the quite standard 4" trolley wheel; TCRT used the rather large, unique 7" wheel.

5.10 151-162 12 cars. Group 1 Spec 1. First group of standard (double-truck) cars. The TCRT-built bodies only of DSR's first double-truck standard cars were built in August-September 1900. These were TCRT cars 833-844, and they began to arrive in Duluth January 3, 1901. TCRT built a second group of 833-844 the following April. (See note after 5.25). The Brill 01/27A2, 5'8" wheel-base trucks arrived March 10. (See also ~~5.48f~~, 5.47f)

~~These were the first of 140 cars that DSR was to obtain from TCRT in the next 25 years~~. (Six more—279-284—were leased to DSR for three years during the WWI emergency, ~~1917-20~~). ~~In fact,~~ all of DSR's double-truck cars—except one for the HIGHLAND AVE. operation and four that were inherited in the Park Point acquisition—were built by TCRT,

Before their arrival, and before they could be put in service, a great deal of preparation was necessary. Because their length (43'2") was greater than that of the longest cars then in use (32'), and much heavier (39,680 vs 17,000 pounds), several major changes were necessary. Loops and wyes, not previously provided, were built. The approach tracks and other facilities at the 26th Ave. W. car house and shops had to be altered. And the roadway department realized the necessity of upgrading bridges, rail and track structure to sustain this greater weight.

The first trial run, therefore, was not made until May 24. The cars went into service on June 2 on the INTERSTATE line, and on the LAKESIDE line beginning on October 31. (Please see 4.20 for subsequent assignments of double-truck cars). Primarily because of their relatively short (5-foot) platforms, this group of cars were referred to as 'small cars', somewhat of a misnomer (see 4.53a).

5.11 163-177 15 cars. Group 2 Spec 1a. The TCRT shops had built 140 'standard' cars when DSR's next order was received in January 1904. During this interval of time several basic refinements and improvements had been made. There were changes in the platforms, both of which had been lengthened a foot, making them six feet long. The front (motorman's) platform had been lowered six inches, affording greater visibility for the motormen, especially the taller men. The rather unsatisfactory single pair of rear gates used on the first group of cars were replaced by a double pair of gates and divided brass handrails, resulting in faster loading and unloading of passengers, and an expediency for conductors collecting fares on a crowded rear platform. A double sliding door replaced a single door in the rear bulkhead. And "the woodwork is cherry instead of maple, giving a more lasting and beautiful finish."

Of greater importance was the use of heavier mechanical and electrical equipment: Brill 04/27A2 trucks with 6-foot wheelbase; four GE70 motors of 40 horsepower each; the heavier-duty K28 controllers. And the cars were now equipped with air brakes and air whistles. All these changes and additions increased the car weight to 49,200 pounds.

The first of these cars went into service in May, at which time double-truck cars were put on the WEST DULUTH-EAST END line.

5.12 178 1 car. Group 3 Spec 1a. In February 1905, TCRT built a group of 12 cars, their numbers 1043, 1080-90. Major differences were the use of Baldwin #1 trucks, with better, outside-hung braking equipment, and a 7-inch drop rear platform which shortened the distance from the ground to the first step. DSR bought number 1043 which was built by TCRT in February 1905. It arrived in Duluth that month, and was put in service on the HUNTERS PARK line March 16, the first double-truck car to be put on a hill line. It can probably be assumed that this was an experiment—and successful—too; five months later the line was completely equipped with double-truck cars to satisfy Council orders of April 20 and September 8, 1904 which ordered DSR to put double-truck cars on the WOODLAND

Trust me on this

[redacted]

** These first 12 cars had a single ~~only~~ pair only of folding gates on the rear of the cars. And, primarily

May 24, '01

5.48f

xxx the car bodies were shipped on ~~NP~~ rr flat cars instead of 5.48f and ~~trans-loaded~~ placed on special RSR trucks ~~to DSR flat cars~~ at the NP & extended 37th Ave. W

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spur, then taken to DSR 26th Ave. W. shops where they were fitted with trucks

line (see 4.30).

5.13 179-182 4 cars. Group 3 Spec 1a. In June 1905 TCRT built a group of 24 cars (their 1088-1111). DSR bought the last four, 1108-1111. 1111 was the last wood underframe car built by TCRT. These four cars were identical to 178 except that they had 8" drop rear platforms; TCRT was still trying to shorten the distance between the ground level and that first step.

Car 179 went into service in August, 180-182 in July, to satisfy a Council order for double-truck car service to be extended to Austin St. on the WOODLAND line (see 2.7).

5.14 183-197 15 cars. Group 4 Spec 2. Though retaining all the basic concepts, TCRT shops continued to improve the quality and utility of the cars it produced. In September 1906 it began to utilize steel underframes, a prerequisite for the use of more powerful motors, which, in turn, provided higher speeds needed for service on the suburban lines. These were originally fabricated and furnished by American Bridge Co. From 26 cars (1196-1220), TCRT selected 15 for DSR which had been ordered December 6. These cars had 6 1/2-foot platforms, increasing the total length of the car to 46'9". The outside width was increased from 8'9" to 9'2", the inside width from 7'7" to 8'2", and the aisle from 21" to 27". All this increased the car weight to 49,800 pounds (some records indicate 51,520 pounds), DSR's heaviest cars.

Delivered to DSR in spring 1907, they went into service in June, July and August on the INTERSTATE and suburban lines, freeing older double-truck cars for service on the AERIAL BRIDGE and EAST 4th STREET lines.

These were the last cars to be built in TCRT's 31st St. shops.

5.15 198-203 6 cars. Group 5 Spec 3. TCRT evidently realized that the cars recently produced had weight too great in relation to power, with the resultant tendency for motors to overheat. Consequently, several improvements and refinements were incorporated in a series of cars built in March-May 1908. Weight was reduced to 47,900 pounds by reducing the size of dimensional woodwork and through other weight-saving economies. TCRT had designed and was now building its own trucks, TCRT #5, quite similar to the Baldwin #5 trucks, but with high-ratio brakes, and trucks into which TCRT now mounted 50-horse power GE213 motors of considerably reduced weight. Correspondingly heavier-duty K37A controllers were introduced at this time also. TCRT built 19 cars, of which six were for DSR, these being delivered in April-June, and put in service in June.

These cars, TCRT 1291-1309, and those that followed were built in TCRT's new Snelling shops.

(With the introduction of the 50-horsepower motors in this series of cars, higher speeds, faster acceleration and improved hill-climbing capabilities resulted. Cars equipped with these motors were thereafter referred to as 'fast' cars. This particular classification, more than any other characteristic, determined all standard car assignments for 30 years thereafter, and there was little or no deviation from it (see 4.53a).

5.16 204-214 11 cars. Group 6 Spec 4. In June 1909, TCRT, continuing its improvement of the basic car design, developed a triple set of rear gates to facilitate faster loading of passengers. This added a mere inch to the rear platform and the car's total length. Electric tail lights appeared at this time.

The arrival of these cars in July 1909 brought the total of double-truck cars to 64, a sufficient number to furnish base service of double-truck cars on all Duluth and Interstate lines on December 1, and thereafter, except PIEDMONT and WEST 4th St. lines, on which the traffic did not warrant the large cars.

5.17 215-219 5 cars. Group 7 Spec 4. There were only minor changes in the 40 cars that TCRT built in May-June 1910, their 1380-1420. DSR bought five of them, and these went into service in June. The weight had now been reduced to 46,200 pounds. These cars were equipped with TCRT #6 trucks.

5.18 222-237 16 cars. Group 9 Spec 4. The cars built by TCRT in May-June 1911 were the same as those in the previous group. DSR bought sixteen of them, the largest group to be purchased by DSR. They were delivered in June.

5.19 238-241 4 cars. Group 9 Spec 4. A month later DSR obtained four more cars identical to those bought in June. These had been built by TCRT in February as their 1482-1485. (TCRT then built four more with the same numbers to replace those that went to DSR). These went into service in July 1911.

5.20 242-251 10 cars. Group 10 Spec 4. TCRT was concerned about problems experienced with hinged doors on the motorman's platform. Cars built on and after February 1912 utilized a sliding door, a recessed front window, and an offset bulkhead door. The ten cars ordered in February 1912, and received in June-August had these refinements which provided increased utilization of the front platform for the carrying of mail and newspapers, and reduced the incidence of glass breakage. These cars also were the first to have a mastic floor covering on the rear platform, a composition with much greater wearing qualities than the wood floors it replaced, and reduced the car weight to 43,700 pounds. These and the three that followed were equipped with TCRT #8 trucks.

With sufficient double-truck cars now to cover first- and second-base operations in Duluth, 12 double-truck cars were sent to the Superior Division, their first, for assignment to Superior local lines.

5.21 252-254 3 cars. Group 10 spec 4. These three cars, same as 242-251, arrived in November 1912, and were probably obtained to fill the need for more cars when the EAST 9th STREET line was opened on November 1. They were originally TCRT's 1564-1566, built in 1912, and, like 1482-1485, TCRT replaced them by building a second set bearing the same numbers.

5.22 255-256 2 cars. Group 11 Spec 5. The 7th AVE. W. INCLINE, which had operated for ten years in a make-shift manner with one small car, was reequipped with two large cars in May 1911 (see 2.8a). The improvement, which increased traffic considerably on the INCLINE, created some increases on the HIGHLAND AVE. line also. Two double-truck cars were obtained from TCRT in December 1912, their numbers 868 & 869. TCRT had built 32 of these shorter (37'7"), narrower (8'5") and lighter (40,200 pounds) version of the standard double-truck car in 1901. TCRT rebuilt the vestibules of these two 11-year old, wood-under-frame cars for double-end operation before delivery; doors, traps and steps were on the same (west) side of the car. The cars went into service on the HIGHLAND line on January 18 and 22, 1913, replacing two single-truck cars (see 5,3).

(Of incidental interest, it took a span of 18 horses to haul each of these car bodies up the central hillside (probably Mesaba Ave.) to 9th St. where they were placed on their trucks, which had been taken up several days before).

5.23 257-262 6 cars. Group 12 Spec 4. In September 1914 TCRT was again able to reduce the weight of cars, this time to 41,700 pounds, when it began using GE 200 motors which were installed in a newly-developed shorter-wheel-base truck (5'6" vs the previous 6'0" trucks). These TCRT #9 trucks had oblong holes in the equalizer bars. The six cars were built and delivered to DSR in September 1914, and went into service the following month. Aside from the changes in trucks and motors, they were the same as those received two years previously.

5.24 263-266 4 cars. Group 13 Spec 4. Anticipating the opening of the MORGAN PARK/RIVERSIDE line in June 1916, DSR bought, and placed in service in May 1916, four cars similar to the six bought two years before. These had been built by TCRT the previous December as their 1789-1792. (Like 238-241 and 252-254, TCRT replaced them with a second set of cars of the same numbers). For reasons not clear, these cars came equipped with a variety of trucks and motors. These were war years of scarcity; DSR and TCRT probably had to make-do with what they had available.

5.25 267-270 4 cars. Group 12 Spec 4. Two months later, in July 1916, DSR bought four more cars, identical to 257-266. These had been built by TCRT in November 1914 as their 1724, 1719, 1716, 1722 respectively. (And as before, TCRT replaced them).

(For the most part, it seems that cars built for DSR came off the TCRT assembly line along with those TCRT built for its own use. But there were some deviations from this procedure. In several instances, TCRT seems to have almost arbitrarily selected cars for DSR that had been built originally for its own use. Cars 238-241, 252-254, 263-266, 267-270 were selected in this manner. In an

bought specifically for the new Morgan Park line

unusual case, cars 267-270 were delivered to DSR about a year after they were built. We can probably assume, then, that they had been in operation on Minneapolis/St. Paul streets for that period of time before being shipped to Duluth. TCRT built a second set of cars, with the same TCRT numbers, as replacements).

5.26 271-278 8 cars. Group 12 Spec 4. In May and June 1917 TCRT built its last standard cars, and eight of them were for DSR. These were identical to those before, beginning with car 257. They went into service in October.

5.27 279-284 6 cars. The general economic boom that came with the war, reopening of the shipbuilding facilities in Riverside, and increased production at the steel mill in Morgan Park were contributing factors in a substantial increase in traffic for DSR: from 23-million passengers carried in 1915 to 32-million in 1917-a 39% increase in two years! These were the same factors that brought about the building of the RIVERSIDE, MORGAN PARK and NEW DULUTH extensions, adding over sixteen miles of track in the western suburbs in two years.

DSR was in need of additional cars. New cars were not available; TCRT had been forced to shut down its car-building shops for the duration. DSR was able to lease six cars from TCRT, their 988-991 built in 1903 (same as 163-177), and their 1672, 1673 built in 1914 (same as 257-262). The six cars went into service the day before Christmas 1917, were used for nearly three years, and then returned to TCRT on October 19, 1920.

5.28 289-294 6 cars. Group 18 Spec 2. DSR still needed more cars as the war effort intensified in 1918. So, on August 27, 1918, it entered into a contract agreement with the United States Shipping Board Emergency Fleet Corporation, a federal agency, having sought help and citing the war effort, primarily the ship yard operation at Riverside, as justification for relief of its desperate situation. The Corporation advanced $81,500 to DSR for the purchase of six car bodies and other equipment (see also 6.3). Title to the equipment remained with the Corporation, DSR acting as lessee, paying 5% per annum. DSR repaid the adjusted principal sum in 1921, and thereby gained title to the cars.

The car bodies only that were obtained in early November, 1918 had been TCRT 1202, 1204, 1212, 1231, 1232, 1234, built in 1906-07, and were identical to 183-197. DSR expended $1,250 preparing each of the cars for service in Duluth, beginning November 20; some accounts show January 4, 1919.

This concludes the listing of DSR's TCRT-built double-truck standard cars. The first of these, cars 151-162, obtained in 1901, cost $5,124 each. Steel underframes, produced by Carnegie Steel, were introduced in cars 183-197, obtained in 1907, raising the cost to $5,530 each. The last cars built for DSR, 271-278, in 1917, cost $6,238.

Although there were small increases in the costs of trucks and electrical equipments during these 16 years, most of the cost increases were in the car bodies which TCRT consistently improved.

Today's street cars (LRVs) cost a million dollars each!

5.29 285-288 4 cars. Group 16 Spec 6. Group 17 Spec 7. With the September 1, 1917 acquisition of Park Point Traction Co.'s PARK POINT line (see 1.10), DSR acquired, among other things (see also 5.36), four double-truck cars which bore the PPT numbers 10, 11, 20, 21, and which DSR renumbered 285-288 respectively.

a. PPT's predecessor ITC ordered cars 10 and 11 from St. Louis Car Co. in October 1904, their job number 525, dated January 16, 1905, and they arrived in Duluth on June 11. The cars were originally named 'Oatka' and 'Aerial'. It was appropriate that they be so named: the Aerial Bridge across the Canal at the north end of the line had just been built, the much-desired and long-awaited connection between the mainland and Park Point. At the south end of the line, the trolley company had collaborated in the building of the Oatka boat club annex three years before, and which had turned out to be a popular spot for pleasure-seekers. Both of these devices generated a good deal of traffic for the line,

which had very little other traffic potential.

On the day after their arrival in Duluth, the Oatka was taken on a 2.8-hour exhibition tour of the city "...accompanied by LaBrosse's Military Band." DSR then assisted by erecting temporary trolley wires and rails when the two cars were ferried across the Canal on the Aerial Bridge on June 13 and 16. They represented the finest in the car-builders' art of the time. The DULUTH HERALD reported: "The new cars are handsome affairs, and much admired. The interior is finished in oak with birds-eye maple ceiling...bronze trimmings throughout...well calculated for the comfort of the passengers."

b. In October 1910, ITC ordered two cars, very similar to cars 10 and 11. These two cars were delivered to the DSR shops on June 8, 1911, and taken across the Canal to Park Point "...a few days later." Built by Danville Car Co., they were numbered 20 and 21. The St. Louis-built cars were 40'5" long, and the Danville cars 41'1". The four cars seem not to have been maintained at DSR's high standards, but were up-graded somewhat in July 1918, converted to one-man operation in April 1920, and considerably up-graded and renovated in January 1930 in preparation for the through-routing over the new Aerial Lift Bridge (see 5.46).

5.30 THE SEARCH FOR ECONOMIES IN OPERATION. The necessity of finding operating economies became quite obvious and urgently necessary as revenues declined sharply following WWI. DSR realized that, on some of its marginally profitable lines, the 'standard' car that was being used was too large, too heavy, and, therefore too costly to operate. The first major step in operating economies was the purchase of single-truck Birney cars in June 1919 (see 5.32 & 5.33). In theory, at least, these cars were to have fulfilled the requirements for an economy car. However, their operation in Superior was met with immediate opposition, and the Wisconsin Railroad Commission (WRC), furthermore, would not approve the use of one-man cars (in Superior).

Uncontrolled, unregulated jitney operation, which began in 1921 grew quickly in the next three years, caused serious inroads into DSR revenues (see 4.23).

The Superior situation remained unresolved for several years. In addition to prolonged fare litigation and controversial regulations, the Superior Division became a continuing deficit operation beginning in January 1921.

Several attempts to reduce operating costs in Superior had been shot down or ended in failure. Birney cars had been rejected in October 1919 (see also 5.30, 5.32). Superior's long-time, stubborn refusal to allow operation of one-man cars in that city was resolved in prolonged litigation in June and July, 1924. Finally, on September 25, WRC approved operation of one-man cars in Superior. DSR immediately went about the task of designing, building and implementing the operation of its first group of one-man cars (see also 4.20).

This change in policy in Superior and restrictive use of street cars on the 4th Street bridge were the catalysts in DSR's quick decision to purchase its first light-weight cars (see now 5.31).

5.31 301-305 5 cars. Light-weight cars. There had been prolonged and in-depth studies by DSR and consultants into changes in its passenger cars and their operation when revenues declined following WWI, particularly the advisability of using smaller, light-weight, economical-to-operate one-man cars, and their availability (see also 5.44). Although management had determined that it could convert its standard two-man cars to one-man operation for a much less cost than the cost of new cars, there apparently was a desire to obtain a limited number of new, light-weight cars for its Superior operations.

TCRT, which had built most of DSR's cars, resumed, on a reduced scale, its car building program which had been abruptly shut down in 1917 during the war. But, even in 1916 before the shut down, TCRT had experimented with cars of lighter weight. The experiments were resumed in 1920, and by February 1923, after passing through several transitions, a new concept had been developed—a departure from the basic TCRT plan used since 1898. TCRT formed a subsidiary organization, The Light Weight Noiseless Electric Street Car Company (LWN) to build and market this newly-developed car, designed by TCRT Master Mechanic W. J. Smith, for which DSR paid $11,739.

The 4th Street bridge/trestle across the Nemadji River in Superior's East End was declared no longer safe for the passage of heavy vehicles, and DSR was forced to discontinue operating its heavy, double-truck cars over the bridge on June 19, 1924. With an urgency now to resolve the Allouez dilemma by using lighter-weight and thereafter.

cars, DSR President Robertson advised General Manager Warren on July 24 that, "...I will immediately place an order with the Transit Supply Co. (of TCRT) for the manufacture of double-truck, noiseless, light-weight, one-man cars for operation in Superior." Technical details, however, delayed WRC approval of plans for the new cars. But, this was resolved when a WRC and DSR delegation met at TCRT's shops on October 1.

LWN built four cars for TCRT's Stillwater Division, five for DSR's Superior Division, and 84 slightly modified versions for other companies. Construction of the cars began in November 1924, the car bodies were well along in February, and the cars were completed and delivered in April. DSR put the five cars in service on the ALLOUEZ line on April 19, 1925. A reduction in weight to 24,200 pounds—just half that of the standard cars—was one of the chief features of these cars. Most of this was accomplished through a radical departure in truck design which TCRT had developed. The trucks had 26-inch wheels instead of the conventional 34-inch, which helped to reduce the distance from rail to car floor from 40 to 34 1/2 inches. The over-all length of the car was reduced from 46 to 36 feet, and the seating reduced to 42 passengers compared to 52 on the standard cars. Use of these new cars with roller bearings and smaller motors made possible considerable savings in power consumption: 1.53 kwh per car mile compared to 2.96 kwh for the large standard cars. (See 5.48i for a description of these trucks). The noiseless features, however, were not quite so! For, actually, the cars were noiseless only in proportion to their weight. (Noiseless cars, as such, were not to come to the nation's streets for another five years).

5.47i

The above constitutes the listing of double-truck cars, acquisitions of which began in 1900.

5.32 295-297 3 cars. Group 19 Spec 8. Single-end single-truck Birney cars. From its humble, small beginnings, the street car as a vehicle had grown to huge size and great weight. The trend, however, began to change about 1910, a trend away from the large costly-to-operate cars. DSR, likewise, saw the advantages of the trend (see 5.30). There were several general types of light-weight cars available in both single-and double-truck varieties. DSR bought Birney cars (generally referred to in Duluth as the 'dinkies'), a four-wheel, one-man, light-weight, safety car. Another feature of the car, quite desirable, but not generally recognized, was the 28"-only distance from street level to car floor, compared to 40" on DSR's standard cars.

The Birney car was only one of—but by far the most popular of—several concepts of cars developed in 1915-1916 to satisfy an apparently growing demand for an economical-to-operate car of this type for low-traffic lines. The four features of the car, developed separately by several builders and on various traction properties, were incorporated by George Birney, master mechanic of the Stone & Webster Engineering Corp., and by J. M. Bosenbury, superintendent of motive power and equipment for the Illinois Traction System, working individually and in collaboration. Using Birney and Safety Car Devices Co. patents, most of the more than 5000 such cars were built from 1916 to 1920 by four builders: American Car Co., St. Louis Car Co., Cincinnati Car Co., and ~~Southern~~ Car Co. The use of a steel frame instead of wood, the utilization of the whole car side as a single truss, elimination of deck roofs and bulkheads and the development of the light-weight truck and 17.5 horsepower motor were the major factors in reducing weight of the car—less than 14,000 pounds—to 600 pounds per foot of car, compared to 1100 pounds in DSR's 51,520-pound standard cars. A combination brake valve, sander and door operating device with 'dead man' features helped to allay strong public opinion against one-man operation of street cars. All major features of the Birney car combined to make it an economical car to operate and maintain, even if it had many other less desirable traits that resulted in serious complaints and rejection from passengers: hard ride, high noise level, uncomfortable wooden-slat seats, insufficient heating and insulation, ~~and~~ congestion that resulted from passengers entering and leaving through narrow, 30-inch doors, and difficulty operating in deep snow.

Charles

five

Osgood Bradley J. G. Brill

Length of both single- and double-end cars was 28' over bumpers. Length of body was 26' 10".

DSR ordered six Birney cars—three single-end and three double-end—from the American Car Co., ~~a J. G. Brill Co. subsidiary~~, in June 1919, and they were built and delivered in September. These were DSR's only off-the-shelf purchase of

street cars after 1893.

The three single-end cars were to have gone to Superior where they were to be used on the BILLINGS PARK-BROADWAY lines beginning October 1. However, the WRC and the City would not permit them to be operated there, and they were assigned, instead, to the KENWOOD line beginning October 4 (see also 4.21).

5.33 298-300 3 cars. Group 20 Spec 8. Double-end single-truck Birney cars. DSR had acquired the PARK POINT line in 1917, and, with it, four double-end, double-truck cars. These were well suited for handling the beach crowds on summer evenings and on weekends. But, during the winter months, passengers were few and far between.

For this particular situation DSR bought the small, economical, double-end Birney cars which went into service on The Point on September 26, 1919. They proved neither popular nor quite satisfactory from an operational standpoint on Park Point or elsewhere (please see 4.36).

5.34 220-221 2 cars. Group 8 Spec 10. 7th AVENUE WEST INCLINE cars. The single, improvised car used on the INCLINE since January 1902 (see 5.35) had become inadequate, with passenger loads consistently in excess of its rated capacity. On March 15, 1910 DSR announced that it had secured the valued services of TCRT's master mechanic, W. J. Smith, for the design and construction of the two new, large cars for the INCLINE. After painful delays, brought about by a great burden of work, TCRT shops were finally able to build the cars in January-March 1911, and a consultant was furnished by TCRT to supervise the installation of the cars and related modifications of the INCLINE, including the installation of electric hoisting equipment, relocation of the intermediate stations and the addition of one at 2nd St.

The pair of cars bore obvious TCRT/DSR characteristics. Length of each car was 24'2" over bumpers; the body was 22'7" long, 10'10" wide and 8'7" high; weight 25,000 pounds; 9'0" wheel base, 34" wheels, and seats for 25 passengers.

Operation of the rebuilt/modified INCLINE began June 10, 1911. (For a description of the INCLINE operation, please see 4.35).

5.35 CAR 63 AND OTHER INCLINE CARS. 3 cars. The two original, large cars utilized when the INCLINE was built in 1891 had bodies 15' wide, 14' high (16 1/2' over the curved roof), and 41' long, and could carry a four-horse team and wagon, and upwards of 250 passengers in large, enclosed cabs on both sides of the car. Each car weighed 27 tons, had corrugated steel sides and roofs on a steel frame, and were mounted on a 27-foot-long chassis with eight 33" wheels; track gauge 10'. They were designed by Samuel Diescher and built by F. Melber with Keystone Bridge Co. There are no indications in DSR records that the cars bore numbers or names.

Following the disastrous fire in May 1901, DSR made several major changes in the operation and physical nature of the INCLINE equipment. The steam hoisting engines were removed (see also, 7.6). Four intermediate stations were installed at or near 3rd, 4th, 5th and 7th Streets. A single car, operating on the west track, and a metal ten-ton counterweight, operating on the east track, replaced the previous pair of cars. Retained were the INCLINE'S 10-foot gauge tracks. The car body, 22'3" long and 8'4" wide, was powered by four #67 35-horsepower motors; total weight was 28,000 pounds. The car body and its two trucks had been built in TCRT's shops in October/November 1901, arrived in Duluth November 26 and went into service January 1.

Although TCRT had assigned number 163 to this car, it being the next number in sequence after the building of cars 151-162 in August/September 1900, it apparently was built and delivered prior to the DSR building of flat car number 64 later that year. So, DSR renumbered it 63, filling a vacant spot in the DSR roster. This change avoided interruption of the 3-digit number sequence of the standard double-truck cars.

Last day of operation was May 15, 1911, when modifications of the INCLINE began again preparatory to the use of a pair of larger cars (see 5.34).

5.36a OTHER PARK POINT CARS. In addition to the four passenger cars (285-288) (see 5.29) that DSR inherited when it acquired the Park Point Traction Co. in 1917, there were other cars operated on Park Point at various times in the prior 28 years. At least 28 can be accounted for.

Ten of DSR's retired narrow-gauge horse cars found their way to The Point for MPSR's original summer-only narrow-gauge horse car operation (MPSR actually used horses, single, instead of mules). DSR cars #4 and #14 were ferried over to The Point on August 16, 1890, and cost MPSR $100 & $400 respectively. Two other cars, not identified by numbers, also went over in August. One of these was quite probably DSR #3, inasmuch as a photo of that era shows DSR #3 in operation

5.36b

Cars of Park Point Companies

Cars	Car Numbers	Type	Length	Builder	Date	Acquired	From	Notes
3		Closed Horsecar	17'			Aug. 1890	DSR	Former DSR 3, 4 Note 2
1		Closed Horsecar	17'			Aug. 1890	DSR	Former DSR 14 Note 3
1	See Note 1	Closed Horsecar	17'			Dec. 1891	DSR	Former DSR 1 Note 2
4		Closed Horsecar	17'			May 1892	DSR	Former DSR 5, 7, 10, 13 Note 3
1		Closed Horsecar	17'			May 1892	DSR	Former DSR 8 Note 3
4	1-4	Closed Motor	17'	Laclede		May 1899	Laclede	Note 4
2		9-bench open trailer	25'	Brownell	May 1891	Jun. 1902	DSR	Former DSR 93, 94
1		9-bench open trailer	25'	Brownell	May 1891	Jun. 1902	DSR	Former DSR 91
1	5	9-bench open motor	25'	Brownell	May 1891	Jun. 1902	DSR	Former DSR 92
2	10-11	Closed motor	40'	St.Louis	May 1905	Jun. 1905	St.Louis	Became DSR 285-286
2	13-?	Closed motor	27'	Northern	Nov. 1891	Jun. 1906	SRT	Former SRT 110,117 Note 5
1		Closed motor	27'	St. Louis	1893	Jun. 1906	SRT	Former SRT 122
3	16-?	Open trailer		Laclede	1888	Jun. 1906	SRT	Former SRT 221,226,229 Note 6
3		Open trailer		Laclede	1890	Jun. 1906	SRT	Former SRT 239,240,241 Note 6
1		Closed motor	27'	St.Louis	1893	Oct. 1910	SRT	Former SRT 121
2	20-21	Closed motor	41'	Danville	~~Jun~~ Oct 1910	Jun. 1911	Danville	Became DSR 287-288
1		Funeral car				1907		See 5.57e
1	12	Snow plow						Note 4
1		Fire car				Aug. 1907		See 6.16
1	13	Tower car	21'	Northern				Note 5
2		Flat car						See 6.17

Note 1 These narrow-gauge horse cars appear to have retained their DSR numbers. See 5.1
Note 2 Acquired originally by DSR from St. Paul City Rwy. in July 1883
Note 3 Acquired originally by DSR from John Stephenson Co. in 1886
Note 4 These appear to have been used cars, built in the early 1890s. One became snowplow 12
Note 5 One of these, probably 13, was converted to tower car 3/148
Note 6 These were former SPCR cable cars

1891

on The Point. These were the cars that were used in MPSR's brief start-up operation that Fall. DSR #1 cost $200 when it went over on December 18 of the following year. MPSR paid $90 apiece for four cars on May 11, 1892; DSR $5, #7, #10, #13 went over two days later. DSR loaded the cars on a barge at the NP Rwy. dock at the foot of 7th Ave. W. for ferrying to Park Point. We can probably assume that these horse cars were retired/scrapped following the dual gauge operation and conversion to standard gauge electric operation in summer 1899.

In preparation for electrification and conversion to standard gauge in summer 1899 under the new management of ITC (see 2.21), four electric cars were acquired in May of that year, and were numbered 1 - 4 by ITC. These were single-truck, open-platform, 16-foot, 6-window, closed cars. Although they were touted as new cars, they obviously were not. Photos of the cars indicate quite conclusively that the body and truck styles were from an earlier time, and that the cars probably had been built by Laclede Car Co. in 1893 or earlier. Where they came from seems not to be known, but see also 5.5.

On May 25 of the following year, ITC bought two 9-bench open, single-truck trailers from DSR for $250 each. Two years later, on June 1, 1902, ITC bought a third trailer from DSR for $300. These three cars were DSR (former MLI) trailers #91, #93, #94. Also on this later date ITC bought motorized open DSR #92 (see 5.7), which was renumbered ITC #5, and eventually became the Park Point fire car (see 6.16). Little is known about these four open and four closed cars while they were on The Point. At some time prior to DSR's 1917 acquisition of the Park Point operation, one of the Laclede closed cars had been converted to a snow plow, which DSR renumbered 5/147 (see 6.4). Of the other seven cars, only one, #4, was still on the property at the time of the 1917 acquisition. It was sold to a local salvage company on April 1, 1919 (for $100). Disposition of the remaining six is not known. (Laclede car #4 has been incorrectly identified on DSR's 1917 official roster of equipment, where it has been obviously shown in error as having evolved from DSR horse car #4. This apparently is a matter of mistaken identity of two cars with the same number, but having operated in different eras and having few physical similarities).

Additional passenger cars were urgently needed when building of the Aerial Bridge and the Oatka Beach facilities generated much new traffic. ITC obtained two new double-truck cars from St. Louis Car Co. in June 1905 (see 5.29a).

ITC, however, was not successful in obtaining two more double-truck cars from TCRT in May 1906. It opted, instead, for nine used single-truck motor and trailer cars; DSR sold three former SRTR motor cars: #110, #117, #122 to ITC for $450 each, plus $455 for reconditioning, plus fenders, headlights, brakes and other equipments. These were delivered June 14, 1906. Simultaneously, ITC obtained six railroad-roof, open, ex-cable cars from StPCRwy: #221, #226, #229 built by Laclede in 1888, and #239, #240, #241 by Laclede in 1890. The six trailer cars were delivered first to DSR shops where they were repaired, reconditioned, painted 'Indian Red', and then delivered to the Aerial Bridge about June 30, 1906. Former SRTR #121 went over to The Point on October 5, 1910 (see 5.39).

Park Point is known to have had a funeral car (see 5.57b). Which, if any, of the above cars was modified for this service, is not known. A former Park Point resident/employee feels certain that one of the four Laclede cars purchased in 1899 was converted for this service.

In an era of austerity, DSR ordered three double-end Birney cars, which were put in service on the PARK POINT line on September 26, 1919. Please see, also, 4.36, 5.32, 5.33.

298, 299, 300 ?

SUPERIOR CARS

The merger in 1900 of the SRTR and DSR brought about a pooling of equipment and a consolidation thereafter of operations. A description of the cars purchased and operated by the predecessor Superior companies follows.

5.37 SUPERIOR HORSE CARS. The SUNDAY MORNING CALL of August 14, 1887 reported, "Three handsome new street cars for the Douglas County Street Railway (DCSR) arrived here Wednesday. They were manufactured by Robbinson & Hitt of Waterloo, IA., and are finished up in first-class style. They will be put into service Monday." These were the cars referred to in accounts of the early horse car franchise that began operations on August 22 in what is now Superior's East End (see 3.1). Their eventual disposition is not known.

There seems to be no reference to them when DCSR purchased four new horse cars for the rebirth and start-up of its modified narrow-gauge lines two years later. There were only four horse cars, numbered 1-4, during the quite short period of dual-gage ~~horse car~~ operation in Superior, only six months to be exact: December 23, 1889 to June 30, 1890 (see 3.1). These were built by Pullman's Palace Car Co.; 14' bodies, 21' overall, 7'4" wide. They seem to have been converted to trailers with the coming of electric cars. This was a simple expedient, inasmuch as there was no change of gauge involved in the Superior electrification.

5.38 99-109 11 cars. Early electric cars and trailers. Pullman's Palace Car Co. factory order number 649 dated February 18, 1890 was for two 23 1/2' electric street cars. These were shipped to DCSR April 22, 1890 and numbered 103 & 104. John Stephenson Co. also built two 23' cars for DCSR at approximately the same time, and were numbered 101 & 102. It can be reasonably assumed that these were the four cars that began electric operations in Superior on July 1, 1890 (see 3.2). Pullman built one more 23 1/2' car on their order number 665 dated March 22, 1890 and shipped it to DCSR on July 5 as DCSR #105. Although Pullman's order number 609, dated December 1, 1890 specified seven cars, only four cars were shipped to DCSR on December 10. Two of the cars were numbered 106 & 107 in logical DCSR number sequence. 106 was 24'; 107 was 21'.

The other two were assigned single-digit numbers 4 & 5. Also shipped at the same time was a similar 21' car, #6 (same Pullman Plan), one of two cable (grip) cars originally built by Pullman in July 1889 for Union Electric Rwy. Co. in Sterling, Illinois, but diverted to DCSR. The assigning of single-digit numbers would indicate that these three cars were apparently motorless and intended for use as trailers. The DAILY CALL of December 2 reported, "The new motors and trailing (sic) cars for the Douglas County Street Railway arrived in the city this morning."

On order number 699 dated November 7, 1891, Pullman built two 25 1/2' cars, numbered 108 & 109, and shipped them to DCSR on December 3.

A semi-official DCSR record of equipment notes that in October 1895, "...they took one of the cars listed above and removed the seats, and installed chairs and carpet and a motor, and thereafter operated this car as a Private Car on the Electric lines." This car appears later in company records as car #100. So also does a car #99. Both of these later additions to the roster had the same specifications as cars #4, #5, #6, so it is quite possible that they evolved from those cars. All cars listed above had been removed from passenger service and stored 'unserviceable' by 1894.

When received from the builders, all the motorized cars above were equipped with trucks purchased from Thomson-Houston Co., make/model not specified, and with F20 motors of only 10 h.p. each. However, all were without motors when acquired by DSR in 1900, which would indicate that they may have been used as trailers.

There was considerable use of trailers in Superior where, unlike hilly Duluth, the flat topography lent itself well for such operation. In its Superior News column, the DULUTH TRIBUNE of December 5, 1894 reported that "...three more new electric cars will arrive for the street railway tomorrow. The old ones will be overhauled and used as trailers." Seven trailers were reported on a commission inventory and 'valuation of property' at the time of the 1900 merger. Which of the above cars eventually became trailers is not known.

5.39a 110-119 10 cars. Superior's track mileage increased from less than six miles to 26 in the four years following electrification. Its first cars were relatively small, underpowered, and their light weight made operation in deep snow difficult. These were probably major factors in management's decision to obtain more and larger cars.

DCSR ordered ten 26'9" cars, 110-119, from Northern Car Co. on May 7, 1891. They were delivered from September to November 16, and put in service on November 18.

b. 120-124, 125-136 17 cars. Corporate control of the Superior operation passed to Superior Rapid Transit Railway on September 10, 1892. Four days later, the Tower Avenue tracks were extended from 21st St., double track, to 61st St., South Superior. The adding of these six miles of track, and others that year, brought an urgent need for more cars. So, early in the following year (1893), five 26'3" cars, 120-124 were obtained from St. Louis Car Co.

In the following year (1894), six 29'3" cars, 125-130, were obtained from

Maintenance of the animals also required the services of a shoeing expert and a veterinarian. And, not to be overlooked, was the considerable cost of manure disposal.

Laclede Car Co.

Finally, in the same year, six 33'2" cars, 131-136, were purchased from American Car Co. These last six cars obtained by Superior managements had vestibuled platforms, the only Superior cars thus provided. And they were two feet longer than DSR's longest cars, and the maximum practical length for single-truck cars.

All 27 cars were equipped with McGuire 19 trucks, T-H rheostat controls, and WP 30 motors of only 15 horsepower each, but sufficient again for operation in Superior where the tracks were mostly on level ground.

c. Conversion to standard gauge

In July 1898, SRTR began the conversion of about ten narrow-gauge cars to standard gauge for use on the Superior portion of the INTERSTATE line when standard gauge operation began September 20, 1898. How many additional Superior narrow-gauge cars were converted is not known. Most, if not all, SRTR cars seem to have been upgraded and painted DSR colors in a car-improvement program that began a year after the 1900 merger.

DSR records do not specifically indicate how many and over what period of time Superior's single-truck cars were retired, a process spread over several years as double-truck cars became available as replacements (see 5.56a).

d. Superior car number assignments

101-136 were the original numbers assigned to the Superior's electric cars, and this series of numbers fitted nicely into DSR's car-numbering system. There are indications that cars 99 and 100 were assigned these numbers by DSR at some later time, and these probably were not their original numbers. They were without motors when acquired by DSR in the 1900 merger, and were stored unserviceable for several years in Duluth, and probably were never converted to standard gauge.

This, then, constitutes Superior's 38 originally-narrow-gauge electric passenger cars, purchased in the first five years of electric operation.

* * * * * * *

5.40 HORSE CARS, MISCELLANEOUS NOTES. In 1887, when DSR was nearing the apex of its horse-car operations, it is estimated that there were, nation-wide, 415 horse-car companies, utilizing 18,000 horse cars and 100,000 horses/mules. Five to ten horses were required for each car in service. In June 1884, for instance, when DSR was extending its operations west along Michigan St., 24 mules were purchased in St. Louis for $72.50 each, a total of $1,740. Horses cost $125. DSR placed a uniform book value of $128 on each animal. Useful life was from three to five years; retired animals sold for from $50 to $110. When electrification came, DSR realized $2,762 from the sale of 25 animals it sold locally. At least two went to the Park Point operation, and others, probably, went to The Iron Range for use in the underground mines. DSR, and other converting companies, probably flooded the animal market; 125 that were shipped to a St. Louis exchange in November 1890 brought an average of only $43.50 per animal. It is interesting to note that in that era of horses/mules, maintenance of an animal was a minimum $.50 per day, or about $200 a year. It required 12 animals per 15-hour day per car; total cost of horse-power was $2,400 per car per year. February 1890 ledger entries show, "...feed used during month: $603; horse shoeing: $131; harnesses, straps, etc.: $11. Maintenance of an animal was 24 hours a day, seven days a week, whether the animal was utilized in service or not. So, animal power, as used in street railway operations, was very costly compared to electric power. Horse cars cost only #750.

To state that DSR had horse cars is technically and categorically a misnomer, although this was the all-inclusive term used generally in that era. DSR's stable was mostly mules, which were less costly initially and more economical to maintain. Although mules were once thought to be temperamental and difficult to handle, recent studies have found that, whereas horses can be overworked to the point of exhaustion, mules will balk when they reach the limit of their working ability. DSR used mules in pairs to pull the cars on its mostly level tracks. The over-all economic benefits therefore seem questionable. In January 1890, when DSR was not yet sure that it would convert to electric operation (which it did, however, ten months later), there were plans to replace the mules with horses...and use larger cars. The NEWS of January 17 quoted Tom Lowry, "Duluth has outgrown the mules and bobtails (small, rear-entrance, one-man cars). The mule must go, and we will put on horses."

Each animal was assigned a number and recorded. By October 1889 the DSR 'Herd

* Minneapolis drivers were paid $35 a month for 9 16-hour days, a 6 days week, and with the additional ~~duties~~ duty of cleaning/washing the car.

legal deadline; the first of these was car 52 which was converted in ~~Feb~~ October.

Book" had in excess of 165 animals recorded.

Horse cars were single end; turntables were installed in the street at terminals to turn the cars. Cars had a one-man crew called a driver; there were no conductors, as such, until the coming of electric cars in 1890.

The MPSR used horse cars in its nine years of summer-only operations. Single horses were used on its water-level route.

Superior's four horse cars ran for only six months. Single horses only were used on the generally level terrain. (See also 3.1)

5.41 CLOSED VESTIBULES. Characteristic of the era, the approximately 42 single-truck electric cars that DSR bought in 1890-1892, and those acquired in Superior and on Park Point, had open platforms at both ends of the cars. In fair weather this was probably an enjoyable exposure for the crew, but the winter's snows, wind and low temperatures must have been cruel. There was strong public sentiment to get the platforms enclosed following a controversial piece of legislation—referred to as the 'vestibule law'—in 1893 to force this matter. The HERALD of November 23, 1892 reported: "The citizens living along the Woodland line are unanimous in desiring that the street railway company shall protect the motormen...and the desire also of the citizens of Duluth and West Duluth that protection be given to the motormen...the small expanse that will be made to the companies in protecting the motormen ought not to be considered a minute..." Rebuilding the open platforms into enclosures was not an easy task, nor a "small expense", for the cars basically did not lend themselves easily to this sort of modification. No doubt DSR made a conscientious effort to do something about it; the NEWS TRIBUNE of July 15, 1893 reported this progress: "The DSR has the car which has been vestibuled in the West End car shops nearly ready for the road, and it probably will make its first trip today." Several cars were modified in this manner in the following months.

The vestibules thus provided were not closed vestibules or platforms in the true sense of the word—indeed not like the completely enclosed cabs of the double-truck cars, the first of which arrived in 1901—for the platforms were closed only across the ends (dashers) of the cars; openings remained at both sides and there were no doors. Public feeling continued to run high, and in July 1895 the Minnesota Supreme Court upheld the Legislature, setting a deadline of November 1, 1895 to get the job done. Both SRTR and DSR shops were hard pressed to get the modifications accomplished, and only a portion of the cars were completely enclosed at the legal deadline. All but 8 Duluth cars seem to have been enclosed eventually.

Superior's first vestibuled car went into service October 29, 1895. Only cars needed for service requirements seem to have been modified in this manner by 1900. PARK POINT cars utilized a removable canvas curtain only for inclement weather operations.

5.42 CONVERSION OF DOUBLE-END CARS TO SINGLE-END. All of DSR's single-truck cars purchased in early 1890's were built as and operated as double-end cars. In other words, it was not necessary to turn the car at the end of each half trip. This had its advantages and disadvantages. Double-end cars did not require turntables or wyes or loops to turn them. However, it did require that the cars be equipped with a double set of controls, fenders, lights, destination signs, and required that the crew 'change ends' for each return trip. Most important at this time of pressure to enclose the platforms, however, was the possibility of permanently closing one side of each platform if the car was converted to single-end operations, thus eliminating two sets of gates and the double openings on both platforms. The first of these came out of the company shops June 20, 1899. By 1905, 22 of the 44 cars were modified in this manner for single-end operation, the maximum number required for assignments at that time.

5.43 FRONT EXIT CARS. All of DSR's 136 standard double-truck cars were originally provided with a passenger entrance/exit at the rear only of the car. Obviously this caused congestion and delays when the cars were crowded. TCRT had experimented with front exit devices as early as 1911. Cars 242 to 254, when received new from TCRT in 1912, had sliding doors, instead of hinged doors, on the front (motorman's) platform, a provision for some sort of front exit, not yet devised. Under extreme conditions, passengers could exit through the motorman's cab, although this hazardous practice was frowned on by management. Based on plans already devised and utilized by TCRT on its cars, planning began in May

one-man cars, in Duluth, and the KENWOOD line was to be the first to get the cars.

Conversion of DSR's fleet of cars from two- to one-man operation was a major task which began in 1924, was completed in the straight jacket of a Depression in 1930, and involved all departments of the company. Planning, designing, rebuilding and testing were methodically and competently accomplished in the company's offices and shops, several early phases of which were effected even before DSR's close, large affiliated, TCRT, launched its comparable program.

Preliminary planning and shop preparations began in May 1924 from blueprints dated April 5. Three cars—163, 165, 166--had been selected for conversion, and the rebuilding project was well along when State Commission Engineers stopped by DSR shops July 21.

DSR filed with the WRC on May 5 for permission to operate one-man cars, previously outlawed in Superior. Hearings were held in Superior on June 9, with nothing resolved. Finally, on September 25, WRC granted the requested permission. Now the scene changed quickly. The three remodeled cars came out of the shops on August 28 and went through several days of shake-down operation and crew training. Instead of their planned assignment to the Kenwood line, they were sent immediately, instead, to Superior for service on the BILLINGS PARK/BROADWAY line starting three days later. DSR was satisfied with their performance and acceptance, and these were followed by two more—164 & 167—in August 1925, and three in 1926, a total of eight cars for use on Superior local lines.

DSR chose cars from its second oldest series--built in 1904--for the initial remodeling. TCRT started with their newest cars. This group of cars had drop rear platforms, but flush front platforms, which would have made them almost impossible to adapt to a front entrance/exit configuration. The rather unique device therefore of turning the car body end-for-end was used to facilitate the remodeling. The rear platform--which had been the front platform--was enclosed and a single set of manually-operated doors--for emergency exit only--replaced the previous rear gate configuration. A double set of pneumatic-operated doors with an overall opening 52 inches wide was installed at the front of the car. Front interior bulkhead doors were removed. The Simplex Safety System, one of two state-of-the-art systems of the time, was installed in all eight cars; this incorporated a 'dead man' control and other safety features in the motorman's brake valve.

As stated previously, sufficient one-man cars had been produced in DSR's shops to equip all Superior local lines by July 1926. Rising costs, declining revenue passengers and declining passenger revenues brought on in part by a plague of unregulated, competitive small bus operators and proliferation of the Model T Ford were taking their toll of mass-transit passengers. In a May 15, 1925 inspection of the Oneota St. tracks, Superintendent H. H. Brown, lamenting the serious decline of revenue passengers on that line, suggested, at that relatively early date that to "...make the line pay, I think we should plan on converting some of our cars for one-man operation, the same as those converted for Superior." So, in December 1927, DSR determined that the time had come for one-man cars in Duluth as well. In step with state-of-the-art in rail transit, DSR incorporated new techniques and control equipments in its stepped-up car-rebuilding program. The first of these cars, 170 and 171, came out of the shops February 18, followed by 172 and 173 a month later. Rebuilding cost of wood underframe cars: $1,970; steel underframe cars, beginning with car 198: $1,600.

These four cars went into service on the WEST DULUTH/AERIAL BRIDGE line on April 1, 1928. Several refinements were incorporated in the rebuilding of these four cars and the 61 others that went through the shops, resulting in what turned out to be excellent cars: 20 cars in 1928, 30 in 1929 and 15 in 1930. Comfortable, cushioned, leather-covered, form-fit seats replaced the traditional rattan seats on most cars. Rear doors with 33-inch-wide openings were treadle operated. Ceilings on most cars were white enameled. Interior lighting was moved from the window posts to the ceiling on most cars, and fitted with milk glass shades. Less apparent to the passengers, but of considerable importance in safety and better operation, was the installation of controllers and brake equipment with 'dead man' features. DSR utilized both the General Electric and Simplex systems, 45 of the former and 27 of the later, all of which also included pneumatic sanders, front and rear. Installation of this additional equipment added 2000 pounds to the cars' weight.

The last car to be converted (car 205) came out of the shops August 30, 1930, six years after the first conversion. Please see 4.20 for additional notes on one-man cars.

during which time 73 cars were converted.

1923, and in October and November DSR shops remodeled ten cars (268-274, 276-278) into front exit cars, providing a 31-inch-wide doorway. The front bulkhead door was removed and replaced with a passageway and steps. Simultaneously, other changes were made in this small group of cars: under-floor heaters with hot-air ducts replaced the conventional hot water system, for which there was no longer space on the front platform; an electric heater (dissipater) was installed in the motorman's cab; and, to afford greater circulation of heated air, a screened opening replaced the window in the left front bulkhead. These cars went into service in November, and were chosen for tests of fare-collection devices (see 5.51).

These modifications were excellent improvements, and greatly increased the utility of the car. Why DSR did not convert more than this one small group of cars is not known; TCRT converted half of its cars in this manner. (Please see 4.7 for additional information, and 4.53a for assignment of these cars).

5.44 ONE-MAN CARS. DSR did have some one-man cars, remodeled and otherwise, before it began the extensive conversion of two-man cars which began in 1924:

Cars 52 and 57 were the two sole survivors of the original single-truck cars. These two had been retained for use on the WEST 4TH ST. shuttle line, and had been converted from two- to one-man double-end, operation in May 1919. These were upgraded again in 1924 to make them more safely adaptable in greatly increasing vehicular traffic on 4th St.

The two HIGHLAND cars, 255-256, had always been one-man double-end cars.

The four double-truck PARK POINT cars, 285-288, were two-man cars when acquired by DSR in 1917, but were converted to one-man operation in August 1919 to bring about much-needed operating economies after WWI.

The six Birney cars, 295-300, were by nature one-man cars; so also were the five lightweights, 301-305.

To combat rising maintenance and operating costs, and utilize cars more nearly consistent with low traffic on some lines (see 5.30), DSR had bought six Birney cars in 1919 and six lightweight cars in 1925. The advantages and benefits proved to be limited, sometimes questionable, and not without some resistance from passengers. And of no little concern was the hard fact that lightweight and Birney cars did not perform well in deep snow, and required budgeted additional costs for snowplowing to be increased considerably (see also 4.20). On a large national scale there had been a trend to one-man operation of street cars, for it was in labor costs that the greatest savings were possible. Also, most of the cars built at this time were for one-man operation, even if provisions were made for a conductor to be used under certain circumstances; This was the manner in which TCRT rebuilt and utilized its cars.

DSR's fleet of standard cars had been well built and well maintained, and were good for many more years and miles of dependable, comfortable service, day in and day out on their assigned duties as God and shop personnel intended. A street car is like money: the better you manage it, the further it will go. This was a major factor of consideration when DSR began a diligent study in February 1923 into the expanded use of one-man cars. DSR had acquired a goodly background of experience with the operation of one-man cars by this time on the HIGHLAND, PARK POINT, WEST 4TH STREET and KENWOOD lines. Management determined that the low cost of converting the cars in its own shops and the savings in platform labor costs by their use were economic factors more favorable than the purchase of new cars.

Mechanical, electrical and structural conversion of DSR's standard two-man cars then in use to one-man operation cost approximately $1,000 per car, plus the additional cost of safety equipment and controllers. Based on prices furnished by A.L. Drum & Co., transit consultants, the price of new, Kuhlman-built, double-truck passenger cars was $19,000, ready to operate; for Birney single-truck cars, $5,400. Management had done its homework well, had studied applicable technical data, and had obtained experience data from other operating companies that were using state-of-the-art equipments. Incidentally, DSR's standard double-truck cars had, originally, cost an average $6,600.

There were other factors, too, that were coming into play at this time. After much litigation, DSR had been ordered to extend the KENWOOD AVE. line. Construction of the controversial track extension began May 15, 1924. DSR had strongly opposed this extension, convinced that costs of operating the line—not to mention amortization of construction costs—would greatly exceed anticipated revenues. This was probably the catalyst that turned the tide to greater use of

6.18 (2) In its early years, DSR's shops, equipment and skilled personnel were frequently called upon to perform various specialized tasks on an emergency, routine or periodic basis for transit / commercial / utility companies in the Twin Ports:

... repaired and maintained Aerial Bridge electrical equipment

... " " modified DBL incline cars

... furnished supplies to IT and repaired / rebuilt their electrical equipment

... repaired and maintained D-S Bridge electrical equipment

... furnished skilled labor for "setting up (newly purchased electric street) cars" for Twin City St. Rwy. Co. of Ironwood, Mich. in 1891

... assisted SRT in making jigs and fenders to satisfy a Superior ordinance in 1899.

... assisted City Gas Co. when hauling, installing large, heavy valves in streets (with use of DSR crane car

5.45 DOUBLE-END STANDARD CAR 163. The through-routing of the CROSLEY line had not worked out satisfactorily following abandonment of the EAST END tracks (Superior St. from 3rd to 24th Aves. E.) on July 27, 1934. Neither had it been found satisfactory to operate extra cars via East 4th St. during the rush hours.

It was determined, therefore, that base service on the CROSLEY line would be a shuttle operation from 45th and Superior Street to the end of the line. A double-end Birney car was sufficient for this base service. Rush hours required additional equipment, however--equipment of much greater capacity than the small Birneys. DSR had nothing to fill this requirement.

Car 163 was selected in September and went through the company shops. It emerged on October 6 as DSR's first and only double-end standard car, equipped with controls, trolley poles, doors and other appurtenances at both ends.

Car 163, along with 165, had been the first two cars converted (in 1924) to one-man operation. 163, therefore, had the distinction of being DSR's most-recycled car.

5.46 MODIFICATION OF PARK POINT CARS 285-288. When it was determined in November 1929 that the four double-truck cars, which had operated on Park Point since 1905 and 1911, would be used in a through-routing plan to the mainland when the Aerial Bridge was rebuilt, it was realized that some changes would be necessary on the cars themselves before they would be suitable for this new lease on life (see also 5.29).

Cars 285-286 had been equipped with snow plows, and for this additional duty they had four motors. For operation on level track, with relatively light loads and relaxed schedules; the other two cars had only two motors—a sufficiency. But, for their new task, all cars were now equipped with four GE67 motors and two K35JJ controllers. The rigid fenders (cow catchers), which were original equipment, were not suitable for mainland operation—would not clear hose bridges, portable crossovers, and abrupt vertical changes of grade. These were removed and replaced with safety devices similar to those used under Birney cars.

Door motors, steps, window guards, cross seats, deck signs and various electrical equipments were also installed, modified and/or upgraded at this time to make these cars safer, easier to operate and compatible with others in mainline operation.

The modifications were made in the company's 26th Ave. W. shops in January 1930. The first of the four cars to be modified was brought across the Canal on February 8.

These four Park Point cars were different from all other DSR equipment also in that they had 3-inch-wide wheel treads—the only cars on the system so equipped. Conventional treads were 2 1/2 inches. These extra-width tires had been a means to reduce the possibility of derailments on the Park Point's relatively poor tracks. There were some concerns in the mechanical department that these wide treads would create some problems when the cars thus equipped began operating over the special work on the mainland in 1930. The roadway department, however, seemed not to be concerned, no changes were made, and time and experience dispelled any misgivings.

5.47 MOTORS, TRUCKS AND CONTROLLERS, PASSENGER CARS

a. DSR's early, single-truck electric passenger cars were, for the most part, purchased from Laclede. The majority of these cars were equipped with McGuire Columbian 4-wheel trucks (claimed to have fewer parts than any truck of that period, but were, unfortunately, noted for their stiff-riding qualities). The first 12 of those cars were equipped with two 15 hp F30 motors produced by the Thomson-Houston Co. Most of those thereafter were equipped with two SRG30 motors of 15 hp each, geared to a 14:67 ratio, except that the ten last cars, purchased in 1893, were equipped with 25 hp Westinghouse WH3 motors and Baltimore trucks.

b. Electric cars purchased by SRTR during this same period had narrow-gauge trucks, into which SRTR found it difficult to squeeze even the small WP30 motors. The first nine of those cars had two very small F20 motors of 10 hp, which performed poorly in snow.

c. A comprehensive, detailed listing of the electrical and mechanical equipment on DSR's second-generation electric passenger cars would be difficult and impractical within the limitations of these pages. Here, then, is a condensed version of the cars as originally equipped:

CAR NUMBER	NUMBER OF CARS	GROUP NUMBER AND SPECIFICATION	YEAR IN SERVICE	TRUCKS	WHEEL BASE	MOTORS	HORSE POWER EACH	CONTROLLERS	GEAR RATIO
				DOUBLE-TRUCK CARS					
151 - 162	12	1 1	1901	*Brill 27A2	5' 8"	GE67	38	K6	15:67
163 - 177	15	2 1a	1904	**Brill 27A2	6' 0"	GE70	40	K28A	15:71
178 - 182	5	3 1a	1905-06	Baldwin #1	6' 0"	GE70	40	K28B	15:71
183 - 197	15	4 2	1907	Baldwin #5	6' 0"	GE70	40	K28B	15:71
198 - 203	6	5 3	1908	TCRT #5	6' 0"	GE213	50	K37A	15:71
204 - 214	11	6 4	1909	TCRT #5	6' 0"	GE213	50	K37A	15:71
215 - 219	5	7 4	1910	TCRT #6	6' 0"	GE213	50	K37A	17:69
222 - 241	20	9 4	1911	TCRT #6	6' 0"	GE216	50	K37C	17:69
242 - 254	13	10 4	1912	TCRT #8	6' 0"	GE216	50	K37C	17:69
255 - 256	2	11 5	1913	***Brill 27A2	5' 8"	GE67	38	K6	15:69
257 - 262	6	12 4	1914	TCRT #9	5' 6"	GE200	40	K43F2	15:66
263 - 266	4	13 4	1916	TCRT #9	5' 6"	****	40-50	K43F2	15:66
267 - 278	12	12 4	1916-17	TCRT #9	5' 6"	GE200	40	K43F2	15:66
285 - 286	2	16 6	1905,17	St.Louis 47	4' 6"	GE67	38	K10	15:69
287 - 288	2	17 7	1911,17	Brill 27G1	4' 6"	GE67	38	K10	15:69
289 - 294	6	18 2	1918	TCRT #9	5' 6"	GE200	40	K43F2	15:66
301 - 305	5		1925	Smith #12	4' 6"	GE258K	25	K28	15:72
				SINGLE-TRUCK CARS					
52, 57	2	21 9	1892	McGuire	7' 6"	SRG30	15	K2	14:67
295 - 300	3-3	19-20 8	1919	Brill 78M1F	8' 0"	GE258C	25	K63B	13:74

* Referred to also as Brill #1 27E 01
** Referred to also as Brill #4 27E 04
*** Had GE70 first year; replaced by TCRT #9, GE200 and K35 in May 1937
**** 263 had TCRT #5 GE213; 264, 265 had TCRT #6 GE216; 266 had TCRT #5 GE70.

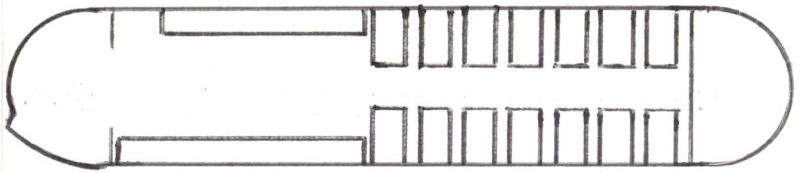
d. In the years that followed, there was some interchanging and upgrading of electrical and mechanical equipments--and brake systems, too. Numerous factors contributed to these changes from the originals: changes in car assignments and configurations, availability of state-of-the-art equipments that provided improved performance, and a general upgrading of equipment.

e. Double-truck cars purchased in 1901-04 were equipped with Brill 27A2 trucks, perhaps the most-widely-used trucks in the industry. For reasons not known, DSR referred to them as Brill 01, 02, 04. Although this was a rather strange terminology, DSR apparently used this device to indicate the year in which they were purchased.

f. Cars purchased in 1905 and thereafter were equipped with Baldwin type A trucks. Early applications were designated Baldwin #1. In its weight-reduction efforts, begun in 1908, TCRT simultaneously began building its own trucks (and installing more powerful motors) which were copies of the Baldwin design. TCRT designated these as their #5, #6, #8, #9. #5, #6, #8 had a 72" wheel base, and were nearly identical; #9 had a 66" wheel base and elongated slots in the equalizer bars.

g. The 12 oldest cars, 151-162, which became unserviceable in February 1930, were, for the most part, stripped of their motors and controllers and used to upgrade Park Point cars, 285-288 (see also 5.46).

REAR FRONT SEATS



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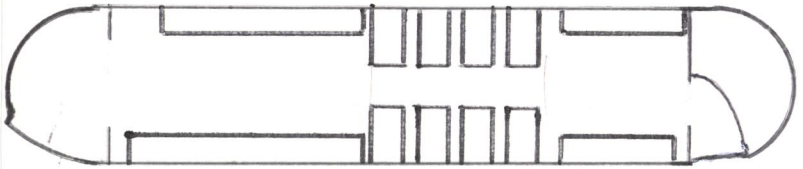

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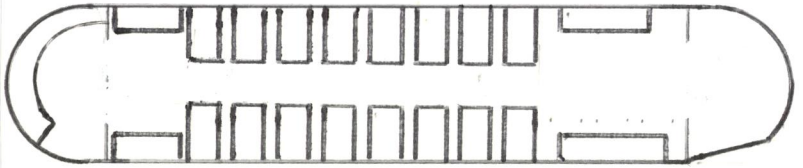

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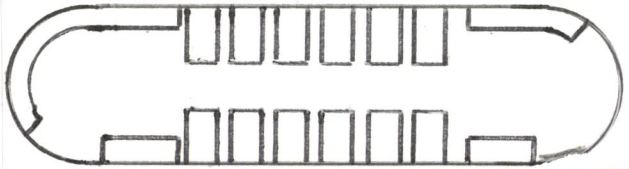

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Standard two-man cars: originally, and until 1920-21, the left rear longitudinal seat extended to the rear bulkhead, seating 48; installation of the PAYE systems, as illustrated, reduced this to 45. Standard two-man cars had a capacity of 112 with standees.

Standard two-man cars converted to front exit.

Standard cars converted for one-man operation. (The first six cars to be converted (1924-26) had 14 cross seats instead of 16)

Lightweight cars (301 - 305).

h. By 1934, all but 27 serviceable cars had been equipped with the 50 hp (GE200, 213, 216) motors, replacing the 38 and 40 hp motors.

i. Cars 301-305 were equipped with TC12RB trucks, developed by Walter J. Smith, TCRT master mechanic (and formerly DSR master mechanic). Also referred to as LN trucks, they were a quite radical departure in truck design at that time, featuring 26-inch wheels instead of the conventional 34-inch; a 54" wheel base instead of the 66" and 72" on the standard cars; concentric clasp drum brakes; Hyatt roller bearings; smaller 25 hp GE258K motors instead of the 40 and 50 hp motors used on the standard cars. (See also 4.20 and 5.31.)

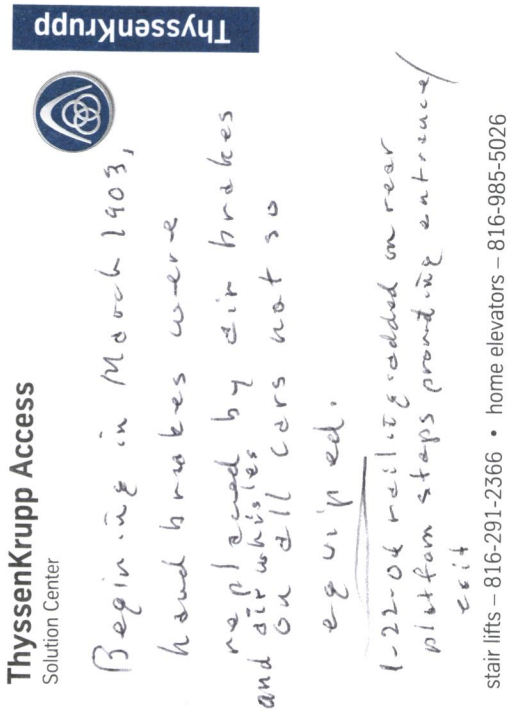
j. By 1923, all standard cars had been equipped with the heavier-duty K35JJ controllers.

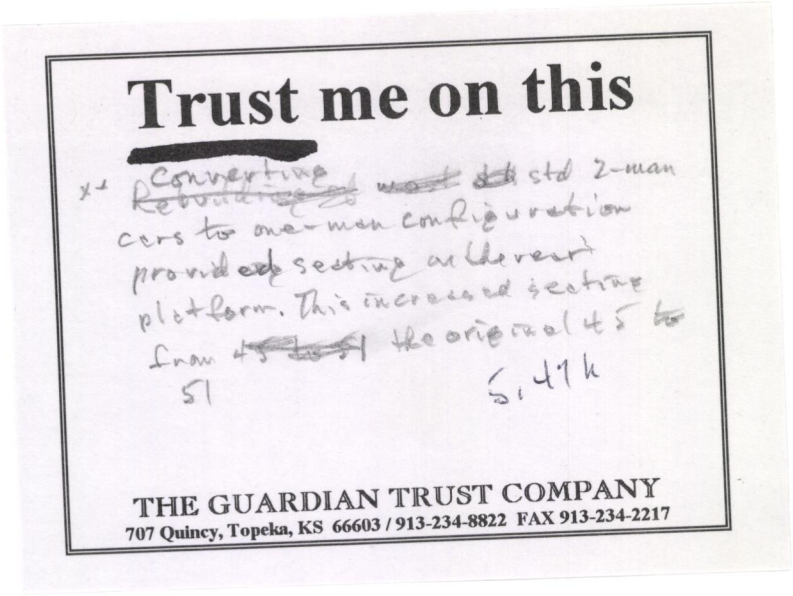
k. All single-truck cars obtained by DSR, DCSR and affiliated companies in the 1890-93 period had two crank handles on the motorman's platform; a hand brake handle, and a crank handle whose lower end was connected via a link chain to an under-floor rotary rheostat, 20 inches in diameter, which controlled the speed of the car. Some of these were replaced eventually with K2 controllers.

l. Brill and Baldwin #1 trucks had outside hung brakes; Smith trucks had concentric clasp drum brakes; all others were inside hung. Cars 295-305 used 26-inch Davis wheels; all others used standard 33/34-inch wheels.

5.48 SEATING ARRANGEMENTS. As far as can be ascertained, all single-truck cars, except the Birney cars, had longitudinal, carpet- or rattan-covered seats, although some of the earliest cars seem to have had all-wood seats. Birney cars had wood-slat seats.

Double-truck cars had uniform seating arrangements, as shown below. Figures shown are seated adults. Capacity of cars, with standees, was approximately two-and-one-half times the seating specifications. Highland cars seated 36. PARK POINT cars seated 40. Birney cars had 14 cross seats; seated 32 & 35. Incline cars seated 26. W. 4th St. shuttle cars 52 & 57 seated 30.





5.49 ROUTE AND DESTINATION SIGNS

Among street car appurtenances, probably none varied more than route and destination signs. The SUPERIOR DAILY CALL of June 28, 1890 noted, "...bear in mind that the cars with red flags are for the East End and those with the blue on Tower Avenue."...a reference to early horse car operation in Superior. However, with the coming of the electric cars, the rather unique device of painting cars various colors was utilized, with cars of a specific color being assigned only to a particular route. This, of course, had a disadvantage: it was confusing when a car was diverted from its normally assigned route...and this would happen when traffic load patterns changed.

Eventually, however, Superior single-truck cars used a 4-faced, front roof-mounted sign which could be rotated along its horizontal axis to any of the four positions. The faces of these signs were painted various colors which helped to more quickly identify the route of the car.

Duluth single-truck cars originally carried four 2-faced board signs which were inserted in brackets on the roof of the car, one on each side, and one on each end. Those cars were also equipped with a bracket on the right front dash upon which could be hung miscellaneous signs: TO CAR HOUSE ONLY, BALL PARK, and others not used regularly.

The adding of several routes in Duluth in 1892/1893 required improved methods of identifying cars, especially at night. Specifications for day-time route signs and night-time route lights were spelled out in an ordinance of July 17, 1893. DSR promptly equipped its cars with colored signs by day and lanterns with varied-color chimneys hung on the dash at night:

DESTINATION	SIGNS	LANTERNS
Lakeside/Lester Park	Silver letters on yellow boards	Clear
Garfield Ave. to Lake Ave.	Blue	Blue
East 4th Street/W. 3rd St.	Black letters on red boards	Red
Woodland	Green	Green
West Duluth to East End	(not indicated)	(none)
West 4th Street	White letters on red boards	(not indicated)

The lanterns were replaced by permanently installed electric marker lights on the dash in 1897 (in 1902 in Superior), utilizing changeable colored lenses, with the same colors as above. However, the number of lens color possibilities eventually became exhausted as more routes were added. But as routings became more complex, the signs became more complex also. The resultant use of smaller characters proved difficult to read at over 200 feet...night or day.

In 1903 DSR began the use of transparent glass signs on its single-truck cars (instead of the wood signs). These were inserted in brackets in front of the deck roof windows. Lights from inside the car offered the advantage of illuminating the signs at night. An additional feature was the use of various-colored glass.

Much-improved canvas (curtain) route roll signs were standard equipment on the large double-truck cars that began to arrive in 1901, signs that had provisions for up to thirty readings, and could be easily changed from inside the car. These were installed in the clerestory of the deck roof windows on both sides near the rear of the car, and one at the front, and were illuminated by interior car lighting at night.

The ultimate was reached January 1920 when DSR mounted destination/number rollsign 'boxes' in the right-side front sash of the standard cars, utilizing large easy-to-read ten-inch characters on canvas rolls (curtains) which were illuminated at night. These were used in combination with the deck route signs, and this excellent means of identification continued in use without change. Superior Division destinations were lettered; Duluth were numbered.

The Birney cars had a small route sign only in an upper front sash. The double-truck lightweight cars had a combination destination/route roll sign box-mounted in an upper front sash. The isolated HIGHLAND AVE. cars carried no signs. Although the double-truck PARK POINT cars had provisions for signs on both sides and both ends of the clerestory, none were displayed until the cars began operating to the mainland in March 1930.

Please see 4.16 for details of route/destination numbers, letters and methods of signing.

5.50 WINTER EQUIPMENT. There are no records of—merely references to—the stoves used in the horse cars.

Winterizing of the early single-truck electric cars required the removal of a portion of the seating in the center on one side of the car, and the installation of a stove, stove box and smokestack; the sealing and weather-stripping of all window sash; and the installation of a floor trap in the stairwells.

For operation in northern Minnesota winters, cars needed to be not only well insulated and provided with storm sash, but a prime requirement was high-output heaters. Circulating water heaters were used in all the double-truck cars, and many of these type of heaters eventually replaced the space heaters on the single-truck cars, also. Cars built prior to 1907 were equipped with Baker heaters; those built in 1908-12 had Peter Smith heaters; and those built 1914-17 had TCRT heaters. Circulating hot air heaters were installed in the ten cars modified with front exits in 1923 (see 5.43). Coal/coke bins, hoppers, scuttles, buckets were provided in season, as were coal shovels, snow shovels and ice scrapers. DSR changed from the coal stove use of bituminous coal to the use of cleaner coke in the winter of 1929-30 and thereafter.

The Birney cars (295-300) each used twelve floor-mounted electric heaters. The light-weight cars (301-305) used four single and four double 500-watt electric heaters.

Beginning in 1911, All cars were equipped with a pair of snow scrapers mounted on the front truck to clear the rails during heavy snow falls. These could be lowered and raised by a foot-operated lever inside the cars. Crews were frequently reminded that every car also carried a 'sleet cutter' which could be quite quickly attached to the trolley wheel to remove ice accumulations on the trolley wire.

See also 6.5 for other snow plow devices.

5.51 FARE COLLECTION AND REGISTRATION EQUIPMENT. The collecting and registering of fares involved many and varied techniques and devices. Originally, all fares were hand-collected by conductors and registered on 'Lewis and Fowler #12 fare registers and ringing devices.' Rapidly rising costs and a drop in riders following WWI prompted DSR to experiment with turnstiles, fare boxes and traffic patterns within the cars. Collectively these were referred to as 'pay-as-you-enter', PAYE or Passimeter systems. DSR used Johnson-type fare boxes, Perry turnstiles and International type R5 double fare registers in various combinations and locations on its cars, beginning in May 1920. Turnstiles were removed by September 1923.

(See also 4.11 for a description and use of these devices.)

A record 60,000 fares were collected July 4, 1904.

5.52 OTHER INTERIOR EQUIPMENT.

A. Push buttons. 28 push buttons were connected to a battery-operated signal bell on the front platform of standard cars. One button was mounted on each of the 24 window posts, and four on the rear platform (two on the bulkhead).

B. Switch iron. A convenience, not normally found on streetcars elsewhere, was a pair of floor slots on all standard cars through which the motorman could drop a six-foot switch iron (rod), for changing the position of track switches. A pivoted cover was provided for closing the opening in the winter. With the coming of the one-man cars, it was not possible to provide this convenience; however, most track switches were electrically actuated by this time.

C. Sanders. A single, right front, knee-operated mechanical sander was provided originally on all standard cars. Eventually more complex brake valves were installed on the cars which incorporated a pressure-actuated valve for sanding. Sand was stored in a tank (hopper) on the front platform. With the general upgrading of cars for one-man operation (in 1925-30), most cars were equipped with three pneumatic sanders: one on each side in front, and one at the left rear. Sand was stored in bins under the longitudinal end seats, both front and rear. This allowed the sanding tubes to be positioned close to the wheels.

the basket-style fender, about half the size of the std fenders.

Birney cars were equipped with the nationally utilized Hudson & Browning two-piece fender.

D. Coasting recorders. Management was aware that operating techniques of its motormen had a considerable affect on the amount of electric current consumption, among other things, in the operation of its cars. See also 4.4. There was a right way and a wrong way of starting, accelerating and controlling the speed of electric street cars. The wrong ways resulted in increased current consumption and excessive wear of wheels and brake equipment, which, of course, was directly translated into increased costs of operation. A device called a coasting recorder—also variously referred to as 'power-saving recorder' or just plain 'meter'—was installed in several cars in 1918 to record the operating habits of motormen. There were factors other than this theory to be considered in the satisfactory operation of cars, so the devices seem to have lost their original value in later years. All were removed in November 1929, from a high of 106 units used in 1921. DSR used 1-300 amp-watt meters on the double-truck cars; 1-50 amp-watt meters on the Birney cars.

In the very cost-conscious Depression years, one of these meters was installed on car 239 on June 1, 1934 for a short period of time to monitor motormen/operator operating techniques.

E. The Birney cars, which arrived in September 1919, were equipped with motorman stools. This bit of comfort brought about requests, of course, to have all cars so equipped. DSR did this two months later.

F. Brooms seem to have been placed on the cars spasmodically. During the winter months, all cars were equipped with shovels, ice scrapers (for use on steps), and bags of sand and salt. All these were placed under forward seats.

5.53 OTHER EXTERIOR EQUIPMENT.

A. Headlights. There are no recorded details of the oil lamps with which the early cars were equipped. In March 1891, 47 of these early cars were equipped with '#7 PC Headlights' from the Dayton Mfg. Co. DSR seems not to have been satisfied with these devices, so in May 1897, DSR began to replace these with shop-fabricated arc lights utilizing silver-plated copper reflectors. The large standard cars received prior to 1910 were equipped with 'Imperial Junior' carbon arc lights. These, and all other types, if any, were replaced with incandescent 'golden glow' headlights by December 1917.

B. Fenders. Many and varied were the styles, shapes and sizes of street car fenders, from the huge, often grotesque, chain-hung, out-front baskets to the small almost-unnoticeable, under-car racks as used on the Birney cars. From the experiments of 1897, DSR developed its own distinctive style of fender, similar to—but different from—those of TCRT. The fenders could be instantly dropped by a slight twist of a lever located between the controller and brake valve on the motorman's platform. These were installed on all cars, including SRTR cars in INTERSTATE service (even the older single-truck Park Point cars, not owned or operated by DSR) in 1898 and soon thereafter to satisfy a local ordinance—December 8, 1896 in Duluth; March 17, 1899 in Superior. The size of the fenders was reduced in 1914 so that cars could be coupled without the necessity of removing the fender. The only cars which did not have these standard type fenders were the light-weight cars (301-305) which were equipped with TCRT-style fenders, the Birneys, the number 2 end of 163 which had under-platform guards, and the double-truck Park Point cars (285-288) which had Birney-style fenders.

C. Gongs and whistles. All cars, even the earliest electric cars, were equipped with foot-operated 11-inch gongs on the motorman's platform. Standard cars modified for one-man operation also had rear platform gongs for backing operations. A few air-operated gongs were installed and tried in 1932. DSR was not particularly pleased with these inasmuch as they became clogged from snow and ice in the winter, and thus inoperative.

Standard cars had high-pitched air whistles; however, in about 1910, deep-toned 'traction' whistles began to appear on the cars.

D. Trolley poles. All cars were equipped with a standard eleven-foot trolley pole with a four-inch wheel. These were mounted, mostly on Nutall GE13 or UST trolley bases. A spare pole and wheel was carried on the roof of all standard cars. After 1910 all cars were equipped with Knutson #5 trolley retrievers. Single-truck double-end cars had one pole. However, soon after the two remaining cars, 52 and 57, went into shuttle operation on the WEST 4TH STREET line, a second pole was added. The very early electric cars were probably equipped with wood trolley poles with copper jumper cables from the trolley-wheel harp to the trolley base.

E. Mirrors. All cars, except Birneys and Highland cars, but including the single-truck cars, had outside rear-view mirrors.

F. Steps and gates. Cars 151-162 had a single pair of rear gates. Cars 163-203 had a double pair of rear gates. Cars 204-278 had triple pairs of rear gates. All standard cars had two rear steps. All standard cars had a single suspended step below the motorman's single door which was to be used by passengers only in extreme load conditions. All single-truck cars had one step and double-fold doors.

G. Rubber bumpers were placed on all cars in October 1919.

H. 5-inch prismatic safety reflectors were mounted on the rear of all cars in April 1935.

I. All cars were equipped with tapered rear bumper covers in May 1914.

J. Beginning in November 1912 and completed in June 1914, all cars were equipped with red-lens electric tail lights.

K. Windshield wipers, referred to as window cleaning devices, were installed on all revenue and non-revenue equipment beginning in November 1921.

5.54 COLORS, LETTERING, SIGNS.

A. Exterior colors, passenger cars. Prior to DSR acquisition, PARK POINT cars were 'Indian red and wine', LAKESIDE and WOODLAND cars also were dark red, and early Superior cars were painted a variety of colors. After the 1900 merger, all Duluth and Superior passenger cars were painted thus:

yellow: bodies

dark olive green: under-body equipment, trucks, bumpers, fenders, headlights, tail lights, retrievers, mirrors, gates, trolley poles

tuscan red: roof, door and window sashes

silver (until 1920): car numbers, panel striping (panel striping was eliminated after 1920)

brown: beading trim, car numbers after 1920

Interiors: cherry stained and always well-varnished. Interior car numbers and permanent signs were silver.

B. Exterior colors, service cars. DSR management pursued two schools of thought on a choice of colors for its service equipment. An inter-office memo of September 17, 1924 stated in part, "...there is sure to be a great variety of opinion..." It was felt, on the one hand, that the predominant yellow of its passengers cars was an identity that should be utilized on all its equipment, even the service equipment. However, time and experience had proven that the yellow color was not particularly practical when exposed to the dirty, often nitty-gritty tasks. The snow plows, supply car and rubber-tired vehicles seem always to have been yellow. Double-truck flat cars were, at varying times, yellow or olive green. Single-truck flat cars, gondolas, electric shovel and roller were olive green. And for reasons not known, the crane car/wrecker was a very dark maroon. An order was issued in April 1930 that, to maintain an image and standard, all service cars and rubber-tired vehicles would thereafter be painted passenger car yellow. The intent of the memo seems not to have been pursued completely.

C. Company name. Except for the horse cars and the first twelve electric cars, none of DSR's cars ever bore the name, monogram, trade mark, emblem, logo or initials of the company. Cars 289-294 bore the name of the U.S. Fleet Corp. while they were the property of that agency in 1917-1921.

D. Exterior car numbers, signs and other markings. All cars, except the INCLINE cars, bore numbers, centered on each side of the car and at the rear (both ends of double-end cars). At least five cars bore names instead of numbers for a portion of their life:

Car 42 became 'ST. LOUIS' when converted for private and charter use.

Cars 89 and 90 were 'WOODLAND' and 'DULUTH', respectively, when originally purchased for and assigned to the WOODLAND line by MLI.

Cars 285 and 286 were 'OATKA' and 'AERIAL' when first operated on Park Point. 'PLEASE HAVE FAIR READY' was prominently displayed on the right front window and on the car side just forward of the rear gates during the 1920s and thereafter when PAYE and other fare-collection devices/systems were used.

Some confusion for passengers resulted when both front exit and front entrance cars began appearing together on the streets beginning in 1924. Large-lettered 'REAR ENTRANCE' and 'FRONT ENTRANCE' markings were therefore displayed appropriately to identify each type to the passengers who were about to board.

With the rapid increase in vehicular traffic and its accompanying hazards to alighting passengers, DSR began marking its cars with large 'STOP 10 FEET BACK' warnings on the right rear of all cars in the mid-20s.

E. Exterior advertising. Unlike most transit operations of the post-Depression era, DSR provided and sold very little exterior advertising space--billboard, Pepsi Cola, display, or otherwise. But there were a few exterior signs of a sort: an August 1889 ledger entry indicates that 26 muslin signs 'TO THE CIRCUS' were purchased, evidently two for each of the horse cars. During the halcyon days of the 7th Ave. W. Hilltop pavilion (1891-1901), DSR displayed large canvas signs on the sides of its cars to promote the company-sponsored fun spot.

Double-sided car cards were displayed in the upper sash of all cars but usually not more than three per side.

In October 1924, a semi-permanently mounted 24" x 36" sign holder was mounted on the left front dash of all passenger cars, to which could be fastened such signs as 'BASEBALL TODAY', 'FALL BARGAIN DAYS' and other civic and sales event notices. The space was not utilized consistently.

In the days of the rear-gate cars, signs were hung on the stationary portion of single and double-gate cars, but not provided on triple-gate cars. These bore such announcements as 'BASEBALL TODAY', and civic events.

During the winter frolic days, DSR entered into the festive mood of the season by decorating one of its cars each season. The front of the car was dressed up, so to speak, in a 'skipper' or snowman motif. Appropriate figures of ice skaters and snowmen on a snow scene background extended the length of the right side of the car. The car was assigned in regular service on a different line each day during the carnival period.

F. Interior sign/markings. 'ENTRANCE' and 'EXIT' markings were placed on the upper riser of the rear steps of two-man cars to expedite loading and unloading of passengers. 'PLEASE TAKE HAND BAGGAGE INSIDE' was prominently displayed on the rear platform of two-man cars to avoid impeding the free movement of passengers. A transverse sign just below the head-liners (ceiling) near the middle of one-man cars admonished 'SMOKING IN REAR VESTIBULE ONLY' on its rear side, and 'PLEASE LEAVE BY THE REAR DOOR' on its front side. The car number appeared on the upper, right side of both the front and rear bulkheads of both one-man and two-man cars. A 'SAFETY, PLEASE DO NOT TALK TO OPERATOR' appeared on the destination sign box of one-man cars. Car cards (advertisements) lined both sides of all cars in the traditional manner above the side windows, and variously--usually in pairs--centered above the doors on both rear and front bulkheads. This service was contracted by Barron G. Collier Co. The City Health Department displayed 8" X 10" signs on the right front bulkhead below the car number with such diverse admonitions: 'HAPPY NEW YEAR, GO FORTH AND BE VACCINATED', 'WHEN VACATIONING, IF IN DOUBT BOIL IT', and others.

Otherwise, DSR did not decorate or embellish its cars. In 1930, for instance, it turned down a request of Park Point residents who had asked for permission to decorate one or more of the Park Point cars on the occasion of completion of the Aerial Lift Bridge; its reason: it did not wish to mar its cars--a policy of long standing.

5.55 OTHER CAR CONSTRUCTION DETAILS AND MODIFICATIONS. All standard cars had oak flooring. A mastic preparation was used to coat the rear platforms of two-man cars and the front platforms of one-man cars to reduce the wear on these heavy traffic areas.

Rear steps of the two-man gate cars were open-grid steel, and all steps on one-man cars were steel plates with a non-skid tread.

All cars had canvas roof coverings.

Siding (sheathing) on the standard cars was 9/16" X 2 1/4" whitewood. The Lightweight cars had Masonite sides; Birneys were all-metal.

All cars had canvas curtains on side and front platform windows.

All upper sashes were fixed. The lower sashes of side windows and selected windows on the front and rear platforms dropped completely below the window sill into the side wall.

All double-truck cars had metal window screens (guards) over the lower sashes; these were replaced by storm sashes in the Winter.

Four of the eleven frosted-glass clerestory windows were hinged (the others were fixed) on the standard cars. These were normally open, except in cold weather, for ventilation. Birneys and Lightweight cars had roof vents.

Trust me on this

~~Except for car 268, all~~ Most cars ~~were~~ were sold to individuals, most for $85. These were car bodies, only, with heating equipment, but ~~not~~ without trucks, ~~without~~ electrical & mechanical equipment.

THE GUARDIAN TRUST COMPANY
707 Quincy, Topeka, KS 66603 / 913-234-8822 FAX 913-234-2217

11-8-90

WORK PAPER - (Lined)
FORM PT-9906 (3-1-64)

~~1890 4 and 14~~

5.56c

~~Little is known of this original operation; track gauge, number and nature of the car(s).~~ With the purchase of its first (std gauge) electric cars ~~(see 5.1)~~ in No. 1890, see (5.2) DSR began the disposal of its ~~to~~ narrow gauge horse cars. ~~DSR Company~~ ~~DSR~~ Company records of the horse car dispositions are quite brief. ~~However, they show a disposition of cars 4 and 14 in August 1890 (see 5.56c).~~

→ "~~These~~ However, ~~company~~ records show cars 1-18: "These are old horse cars of which no records have been kept." 10 of the original 18 horse cars went to Park Point; 4 to other companies ~~Dete~~..." ~~(See~~

In a strange maneuver, car 4 was returned to DSR during the auction and change of management and gauge in 1919.

Bronze hand-hold steps to the roof were mounted on a front window post on one-man cars, and on a rear window post of two-man cars.

To provide maximum, unobstructed view for motormen, several variations of divided sash were utilized in the windows on the curved portion of the front platform.

5.56 DISPOSITION OF CARS.

a. Superior cars. SRTR's three horse cars were modified for use as trailers when the electric cars replaced them. There is no record of their demise. Of the original 38 SRTR single-truck passenger cars, 17 were sold to other street railway operators; mostly to Aberdeen (South Dakota) Railway in 1910 and 1911, and to Granite City Rwy. (St. Cloud, Minnesota). Three cars were converted to work cars. Six cars went to local salvagers, and the few remaining (car bodies only) went to individuals. Eleven of the oldest cars, 99-109, built in 1890, had already been removed from revenue service by 1894. DSR disposed of all remaining SRTR passenger cars by May 1913, although most of these had been in retirement/semi-retirement for several years.

b. Park Point cars. Nothing is known of the demise of Park Point horse cars. Of the four single-truck, standard-gauge electric passenger cars obtained for Park Point in 1899, one was converted to a snow plow (see 6.4). Disposition of the other three is not known. It is not known how long these cars operated on The Point; a photo shows car #3 in operation in January 1908. There seems to be no record of disposition of the other 18 single-truck cars that operated under several managements on The Point, all of which, however, were no longer on the property when DSR acquired the company in 1917.

c. DSR single-truck cars. Disposition of DSR's large fleet of single-truck cars would produce a complex and lengthy dissertation. Briefly: 10 of the original 18 horse cars went to Park Point; four to other companies; disposition of the others is not known.

Of the original 64 single-truck electric passenger cars, approximately 38 were sold to other street railways: Aberdeen, St. Cloud, Park Point and Belt Line Railway. Approximately 10 cars, several of which had been damaged in accidents, fires or other misfortunes, were converted into work cars in the company's shops. 22 were sold to local salvage companies. The balance, for the most part, were sold or donated (bodies only) to individuals. Cars 52 and 57 were the last to be retired when the WEST 4th ST. line was abandoned in July 1930. All other single-truck cars had been retired by November 1923.

d. Double-truck cars. With the decline in passenger traffic following WWI, 25 double-truck cars became surplus and were put in semi-retirement in 1920. The first of these were the 12 oldest cars, 151-162, built in 1901. The well-maintained cosmetic condition of these venerable work horses belied the deteriorating condition of their wood underframes. These were disposed of in Spring 1931. The 15 heaviest cars, 183-197, costly to operate, were never converted to one-man operation, and were disposed of in 1935-36. So also were the front-exit cars, 268-278, the former Fleet Corp. cars, 289-294, and other individual cars which for varied reasons were not regularly available for assignments: 181, 182, 222, 233, 235, 257-263, 267.

The four double-truck Park Point cars, 285-288, were retired and disposed of when rail service on Park Point ended in June 1931.

Car 268 was sold to the DM&IR where it was converted to diesel-electric operation for shuttle passenger (employee) operation in the Proctor yards and shop areas.

Cars 219, 240, 248 were scrapped. Cars 169 and 264 were destroyed in railroad crossing accidents.

The remaining cars, all one-man cars, were in continuous service until the end of all rail service.

e. The six Birney cars and five Lightweight cars saw very little service in Duluth after rail service was abandoned in Superior in 1935, and were disposed of in 1938.

f. Car 265 was resurrected from the Northern Wisconsin woods in 1973. Car 78 was brought from near-decadence in a West Duluth back yard in 1980. Both cars have been lovingly, beautifully restored/rebuilt by volunteers, and are performing excellently on the former TCRT LAKE HARRIET line.

Trust me on this

From 1926 through 1930, DSR instituted a major mechanical, ~~and~~ electrical "~~overhaul and renew~~" ~~inspection~~ and reprinting "overhaul and renew" ~~$~~ project of almost all cars from 151 through 268. Four cars were "put through" the company shops simultaneously on a staggered cycle during which they were stripped and rebuilt from "the wheels up", emerging from the shops "as new".

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Disposition of Duluth and Superior horsecars and original electric cars

The only recorded disposition of DSR horsecars were the seven cars sold to the Minnesota Point St. Ry.: August, 1890: 4 and 14; December, 1891: 1; and May, 1892: 5, 7, 10 and 13.

1892

According to DSR accounting records six cars were "sold" to the Lakeside Ry. Co. December 1st: 30, 39, 40, and 44-46. Apparently this was a paper transaction only.

1893

Car 30 ran off the end of the Lake Ave. line into the ship canal September 17th. Only the truck, motors and controller were salvaged.

1895

Destroyed by fire: 31.

1900 and 1902

Sold to Interstate Traction Co. (Park Point): 91-94.

1903

Sold to St. Cloud, Minn.: 33, 36, 105, 108 and 109.

1904

95 was scrapped except for the underframe, trucks and motors which were used in the construction of Tower Car 1/67.

1906

Sold to the Duluth Belt Line Ry.: 25 and 28.

Sold to Interstate Traction Co. (Park Point): 110. 117 and 122.

1907

Sold to individuals: 26 and 27.

1909

87 was wrecked on 3rd St. and destroyed in December.

1910

Sold to Granite City Ry. (St. Cloud): 69, 71, 76, and 77.

Sold to Aberdeen Ry. (S.D.): 46, 113, 115, 119, 120, 125, 126 and 129. (129 had been equipped with snow plow blades in 1908 for use on the recently opened "Allouez" line in Superior.)

Sold to an individual: 121 and 123.

Burned and destroyed: 74 and 114.

Converted to a Tower Car: 112.

1911

Sold to Aberdeen Ry.: 116 and 127.

Burned on the Highland Ave. line: 43.

Given to an individual: 78.

Converted to a Tower Car: 111. (Both 111 and 112 were converted for use in rebuilding the Billings Park, South Superior and Belknap lines in Superior.)

1912

Sold to Duluth Machinery Co.: 44, 45, 48, 54-56, 58, 60, 68, 70, 72, 81, 83, 84, 86, 112, 130, and 132-135.

Date of Disposition unknown but probably during the 1901 to 1912 period:

Sold to Grand Forks Transit Co. (N.D.): 19 and 102.

Sold to individuals: 20, 22, 24, 29, 38, 106 and 118.

Given to individuals: 21, 99, 100 and 103.

Burned at the Incline Ry.: 23.

Sold to the Normal School for waiting station: 101.

Sold to the Lakeside Club: 104 (waiting station) and 107.

Destroyed: 32, 35, and 37.

Wrecked and destroyed: ~~121~~ and 128.

Burned: 124

Destroyed: Snow Sweepers 137 and 138.

Destroyed: 34, 89 and 90.

1913

Sold to an individual: 40.

Wrecked and burned: 136.

1914

Wrecked and burned (jumped the track on 21st St. viaduct in Superior): 80.

1915

Sold to Duluth Belt Line Ry.: 39 and 41.

Converted to a Supply Car (for use in Superior): 62.

1917

Scrapped: 49 (trucks and motors to Flat Car 7/144), 50 (trucks and motors to 42), 61 (trucks and motors to Flat Car 6/143) and 85 (trucks and motors to Flat Car 5/142).

1918

The body of 42 "St. Louis" (Private Car) with trucks and motors from 50 was sold to the Duluth Iron & Metal Co.

1919

52 and 57 were rebuilt during May and June to double end, one-man, pay-enter, cars for shuttle service on the West 4th St. line; they retained the original equipment: one McGuire truck, two SRG 30 motors, and two K-2 controllers.

1920

Converted to a Supply Car during September:131.

1923

Bodies scrapped; motors and controllers stored; truck and floor used to build ash car trailers: 47, 51 and 79.

Sold to West End Scrap Iron & Metal Co.: 53, 59, 62, 73 and 75.

Body sold to an individual; truck, motors and controller sold to West End Scrap Iron & Metal Co.: 82.

1931

Retired: 131.

Carbodies sold: 52 and 57.

Disposition of TCRT-Built Passenger Equipment

1911

The body of incline railway car 63 was sold to an individual; the four G.E. 67 motors were placed on Flat Car 1/64.

1917

264 was wrecked September 21st on the C. St. P. M. & O. Ry. crossing at 13th St. and Hill Ave. in Superior.

1927

169 was wrecked January 6th when it was rammed broadside by the G.N. Ry.'s "Gopher" passenger train at the 21st St. crossing in Superior. Five streetcar passengers and the locomotive fireman were killed.

1931

Carbodies sold: 151-162. (151 and 158 became the trolley cafe in Cromwell, Minn.) 52, 57

1934

Carbodies sold: 270.

1935

Cars retired: 184 and 188.

Carbodies sold: 181-183, 185-187, 189-198, 261, 269, and 271-278.

1936

Carbodies sold: 222, 233, 235, 257-260, 262-263, 267, and 289-294.

1937

Carbodies sold: 164, 165 and 167.

1938

Carbodies sold: 166, 168, and 177.

1939

Cars retired: 163, 171, 255, and 256.

Sold to West End Iron & Metal Co.: 220 and 221.

Burned in carhouse yard: 248 (This was the last car to operate in Duluth July 9th and was completely stripped by souvenir hunters.)

Carbodies sold: 170, 172-176, 178-180, 199-205, 207-209, 211-212, 215-216, 218, 224-225, 230, 232, 234, 236-237, 241, 243, 245, 250, 252, 254, 265, and 266.

Sold complete to the D. M. & I. R. R.R. in June: 268 (became their diesel-electric motor car W56).

1940

Scrapped in carhouse yard: 219 and 240.

Carbodies sold: 206, 210, 213, 214, 217, 223, 226-229, 231, 238, 239, 242, 244, 246, 247, 249, 251, and 253.

Disposition of Service Cars

1923

Sold for scrap to West End Iron & Metal Co.: Supply Car 62.

1931

Retired: Supply Car 131.

1933

Retired: Tower Car 1/67 and Ash Car Trailers with trucks from 47 and 51.

1935

Retired: Supply Car 1/88 and Flat Car 5/142.

1937

Flat Car 1/64 was sold in January to the Inter-State Iron Co., Calumet, Minn., for use on their electric railroad.

1938

Retired: Flat Car 1/65 (sold?) and Flat Car 6/143.

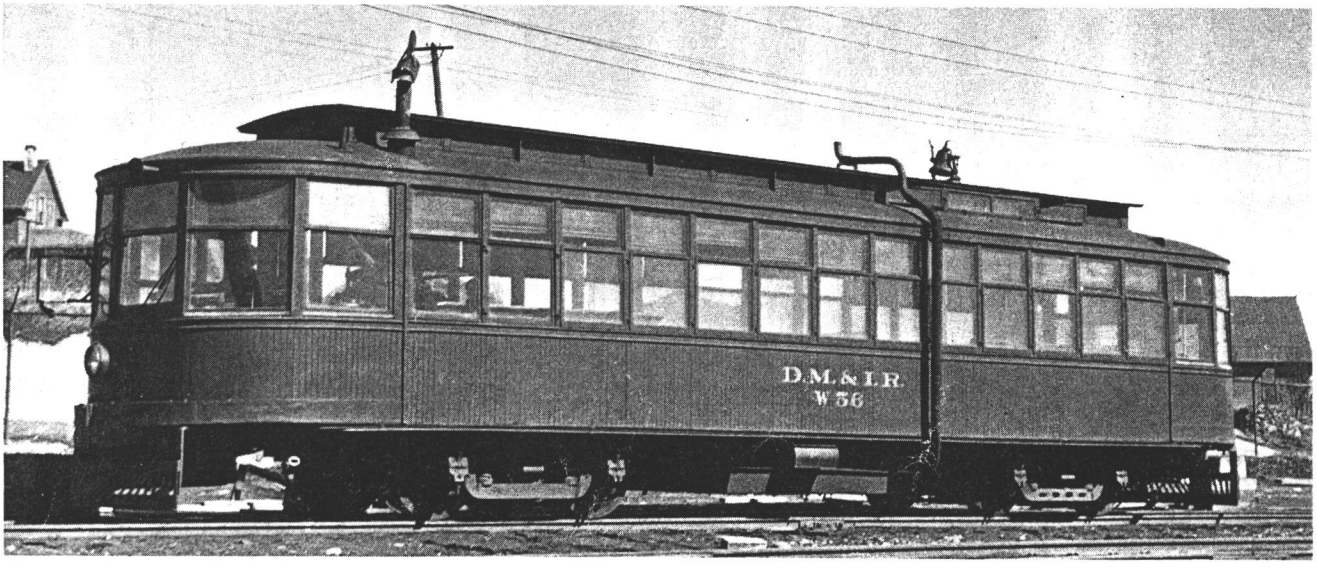
1939

Retired: Flat Cars 3/96 (scrapped 1940), 4/97, 7/144 and 8/145; Snow Plows 1/139, 2/66, 3/140 and 4/146 (scrapped 1940).

Scrapped: "Goliath".

1940

Retired: Wrecker 1/141.



(Joe Hutchinson collection)

~~5.606~~ 5.57 Valuations

Double-truck passenger cars 151-278, built by TCRT, cost from $5,100 for 151 in 1901 to $6,200 for 278 in 1917. A consulting company

~~Passenger Car values~~ placed the ffl values on the cars as of 1-1-27

PRICE TAGS

6-01	Cars	151-162	12	$6,341 ea
	"	189-197	9	7,103 "
		198-203	6	6,903 "
		204-218	12	6,976 "
		222-241	20	6,292 "
		242-254	13	6,910 "
	~~Highland~~	255-256	2	6,431 "
6-17		257-278	20	6,657
	Includes ~~Park~~ Pt	285-294	10	10,000
		295-297	3	2,986
		298-300	3	3,306
		52-57	2	3,019
11'00" wide 24'00" long	Incline cars	220-22	2	7,179

~~My roster shows length of 295-300 @ 28'0"~~ ?

~~ICC roster 26'10"~~

~~Check Birney Car book~~

g. Work cars. Park Point snowplow 147 and tower car 148 were scrapped after rail service ended on The Point. Superior tower car 51 and supply car 62 were scrapped in 1923; supply car 131 in 1931; supply car 88 and flat car 142 in 1935. Flat car 64/1 was sold to Interstate Mining Co., Calumet, MN. in 1937.

All other work cars remained serviceable in Duluth until the end of rail operations, at which time they were scrapped.

Wrecker/crane 141 was used in the big clean-up/scrapping/salvage projects after rail operations ended, and was the last piece of rail equipment to go, in October 1940.

h. Following abandonment of the INCLINE, the two car bodies were sold to individuals. For disposition of the INCLINE structure, please see 7.8.

i. Passenger car bodies of all sorts, when retired, were normally stripped of trucks and all mechanical/electrical equipments, and sold to individuals for use as cottages, lunch rooms, farm buildings and otherwise. Car bodies with heating systems, storm sash and seats sold for an average of about $80 each.

5.57 MISCELLANEOUS NOTES.

a. Maintenance of cars. Like TCRT, which set an extremely high standard of car appearance, DSR too took great pride in the cosmetics of its equipment, and was sensitive about the image created by its equipment on the streets of Duluth and Superior. This was not its only concern; DSR also maintained its equipment in excellent mechanical and electrical condition as well. Cars were 'put through' the shops on a regular schedule to 'overhaul, renew and repaint', at which time each car was completely stripped and rebuilt from the wheels up, emerging from the shops 'as new'. Four cars, simultaneously, on a staggered cycle, went through the shops on the 30-day rebuilding process. Single-truck cars were given a 'general overhaul' every 8,000 miles. The better-built double-truck cars, however, did not require rebuilding at such short intervals. It is said that the shopmen, extremely proud of their craft excellence, reluctantly released each rebuilt car from the shops, knowing well the wear-and-tear and hazards that the cars would again be exposed to on the cities' streets. During the reduced-budget days of the Depression, exterior painting of the cars on a regular schedule continued even if complete rebuilding was not economically possible. Eight cars were given two coats of enamel in each of the four summer months.

On a daily basis, each car was swept, dusted, windows washed, sandboxes filled, coal/coke buckets filled (in winter), brakes adjusted, motors, journals and controllers lubricated, and attention given to defects noted by motormen/operators. The 7th AVENUE WEST INCLINE cars and hoisting machinery were given special attention daily.

b. Private cars. As was common practice among street railways, DSR and SRTR had private cars, providing comfortable travel for top management and their guests. DSR converted car 42 into an elegant private car in November 1896 and named it 'St. Louis' (see also 4.8). The car had curved glass vestibule windows, electric heaters, green color velvet drapes, shutters, wall-to-wall oriental carpet, wicker chairs, polished brass, "...evidence of the excellent work that can be done in the (DSR) shops." The car was 'decommissioned' in 1917, and the car body was sold to the St. Cloud (Minnesota) Public Service Co. in February 1917. The mechanical and electrical equipment and truck were utilized in building work car #145 in July for help in constructing the MORGAN PARK line, and later became an ignominious ash car.

Superior, too, had a private car. Please see 5.38 for details.

c. Funeral cars. Funeral cars were a service offered by many street railways before improved streets were common place. Normally a standard car was modified slightly with extra-width doors or a horizontally hinged door section in the side of the car to accommodate the casket.

In collaboration with the County commissioners in May 1903, and again in September 1910 with the Duluth Cemetery Association, plans were considered to extend DSR tracks into the Forest Hill cemetery from the WOODLAND line in Hunters Park. This never occurred.

A funeral car was included in plans for a proposed cemetery extension of the PIEDMONT AVE. line in March 1912 (see 2.16). Nothing seems to have come of either of these plans. DSR made plans for a funeral car in May 1903. Never built.

Although details are lacking, PPT provided a funeral car and related services on Park Point in 1907 or before, and ending in 1915 when suitable streets were first provided.

5.58a TROLLEY BUSES. When the LESTER PARK rail line was abandoned from 45th to 61st Aves. E. on August 26, 1931, replacement service was provided by two trolley buses, numbers 1 and 2, that began operating October 4, DSR's first use of this mode. These were 35-passenger trolley buses built by J. G. Brill Co. Model T40. The west end of the line utilized Regent St. and 44th Ave. E. to provide a triangular loop and transfer connections with CROSLEY street cars and others terminating at 45th Ave. & Superior St.

The PIEDMONT AVE. rail line was abandoned May 10, 1934, and the tracks on Superior St. from 3rd to 24th Aves. E. (the EAST END/ARMORY rail lines) were abandoned on July 27. Replacement service was provided by seven new trolley buses, numbered 3 to 9, purchased in June from Brill, their 40-passenger, model T40. Training operations began immediately following their delivery on July 31. The first scheduled inbound PIEDMONT trip departed 10th St. at 6:33 a.m. August 5. The newly-installed double trolley wires now extended in a continuous line along Piedmont Ave., Superior and Michigan Sts. to Lester Park. An 'EAST END' trolley bus loop at 32nd Ave. E. became operational at this time.

Simultaneous with the PIEDMONT trolley bus extension, trolley bus wires were installed along West Superior St. to the company's shop and garage at 26th Ave. W. to facilitate the pulling out and in of trolley buses.

Cost of this first major conversion from street cars to trolley buses was $260,000, of which $60,000 was for the erection of the overhead wires and related devices. A year later, in August 1935, nine more trolley buses, numbered 10 to 18, were purchased from Twin Coach Co., their model 40TT.

To assure safe operation on Piedmont Avenue's steep grades, the trolley buses purchased for that service were equipped with steering-column-mounted, hand-operated controller-notching devises, providing operators with step-at-a-time control on slippery streets and in deep snow. All trolley buses were equipped with these devices effective December 3, 1935.

When it was determined that street car service would be ended in Duluth, planning went into high gear to find suitable replacements.

A December 19, 1938 "Summary of Investment Required and Annual Operating Result." listed four plans that included/compared the use of trolley buses @ $12,500, 36-passenger gas buses @ $9,500, 25-passenger gas buses @ $6,100, and overhead (trolley) distribution, all four of which had closely matched dollars.

Briefly, Plan A provided trolley buses on W. Superior St., 21st Ave. W., and on W. 3rd St./Grand Avenue to 66th Ave. W.; and on 23rd Ave. E., E. 4th St., Wallace Ave. & Woodland Ave. to St. Paul Ave. (only) in Hunters Park. No explanation was given for the use of 23rd instead of 24th Ave. E., but probably the steep grade and narrow roadway on 24th Ave. between Superior and 1st St. was a perceived deterrent. 35-passenger gas buses would be used on the E. 4th, E. 8th/9th Sts., West Duluth/Oneota, Riverside, Morgan Park lines. 23-passenger gas buses would serve the balance of Duluth lines: Crosley, Woodland, Morley Heights, W. 8th St., Park Point, Duluth Heights, New Duluth, Fond du lac, Proctor/57th Ave. W.

Plan B provided the same trolley bus routes as Plan A. But all other lines would be served by 23-passenger buses.

Plan C provided the same trolley bus routes except the Woodland line would be extended to Austin St. All else was the same as Plan B.

Plan D routed the trolley buses up 2nd Ave. E., E. 2nd St., 6th Ave. E., E. 9th/8th Sts., Woodland Ave. to Austin St.

None of the four plans was utilized; however, elements of all the plans were resolved in January (1939), and orders hastily placed for buses, trolley overhead hardware, and modifications to the 26th Ave. W. shops.

The HUNTERS PARK/WOODLAND/WEST END/WEST 3rd ST./GRAND AVE. rail lines were abandoned July 8, 1939. Replacement trolley bus operation on the HUNTERS PARK/WOODLAND line began November 4, using the original 24th Ave. E. route. On the same date, trolley buses began operating on West Superior St., 21st Ave. W. and West 3rd St./Grand Ave. to a loop at 64th Ave. W. For this considerably extended service, eleven more trolley buses, numbered 19 to 29, were purchased in August 1939 from Brill, their model 40-SMT. One of these, number 19, was a demonstration unit, built in 1936. As the intensified war effort produced greatly increased numbers of riders for DSR, three additional buses, numbered 30-32, were purchased in September 1944 from Pullman-Standard Co., their model 43CX-100-44CS.

DSR officials watched with interest the initial development of trolley bus construction and operation in October 1921 in Minneapolis—a very early experiment of this new mode of mass transit.

The last day of trolley bus operation was on May 19, 1957.

5.58b TROLLEY BUSES

Number of buses	Bus numbers	Model numbers	Builder	In service	Pass-engers		Motors	Hp	Weight
2	1 - 2	T40	Brill	8-31	35	2	1154-A4	65	17,600
7	3 - 9	T40	Brill	8-34	40	2	1154-A4	65	18,000
9	10 - 18	40TT	Twin Coach	8-35	35	2	1154-B1	65	17,000
1	19	40SMT	Brill	11-39	40	1	1213-D2	140	18,500
10	20 - 29	40SMT	Brill	11-39	40	1	1213-D1	140	20,150
3	30 - 32	43CX-100-44CX	Pullman-Standard	9-44	44	1	1213-D7	140	20,850

3 buses retired in 1955, 9in 1956, and 20 in 1957

5.58c GAS BUSES. In addition to the 32 trolley buses, DSR's roster of gas buses grew from one bus for the MORLEY HEIGHTS line in 1928 to 23 in 1934, to 39 in 1935 when rail operations ended in Superior, to 61 in both cities in 1938. With all rail operations ending in Duluth in 1939, substitute gas buses increased the total in 1944 to an all-time high of 151.

5.59a RECAPITULATION OF PASSENGER CARS PURCHASED/ACQUIRED 1882-1900, AND OPERATED 1883-1916, except as noted

Car Number							
1-18	18						Horse cars, Duluth
19-62 except 42,51		42					Single-truck cars purchased 1890-92, open platform
68-87		20					Single-truck cars purchased 1893, semi-enclosed platforms
89, 90			2				Single-truck cars from WOODLAND line, closed
91-94				4			Single-truck open trailers from Woodland line, closed
95					1		Double-truck open car from HIGHLAND line
99, 101-110, 113-136						35	Single-truck narrow-g auge Superior cars
Unmumbered					1		INCLINE cars, operated 1891-1901
	18						18 Horse cars, Duluth
		62	2				64 All single-truck cars, Duluth
		62	2	4	3	35	103 All single-truck cars, Duluth and Superior

5.59b RECAPITULATION OF PASSENGER CARS PURCHASED/ACQUIRED 1901-1925, AND OPERATED 1901-1939, except as noted

Car Number								
52, 57							2	Single-truck cars, purchsed/operated 1892-1930
63			1					INCLINE car, 1902-1911
151-168	18							Double-truck standard cars, wood underframe
169		1						Standard car, wrecked Jan 7, 1927
170-182	13							Standard cars, wood underframe
183-219	37							Standard cars, steel underframe
220-221			2					Incline cars, 1911-1935
222-254	33							Standard cars
255-256				2				37' HIGHLAND cars
257-263	7							Standard cars
264		1						Standard car, wrecked Sep 21, 1917
265-267	3							Standard cars
268-274	7							Standard cars, front exit
275	1							Standard car
276-278	3							Standard cars, front exit
279-284				6				Standard cars, leased from TCRT 1917-20
285-288					4			Park Point cars
289-294	6							Standard cars
295-300						6		Birney cars
301-305							5	Light-weight cars
	128							128 Standard cars in continuous service
	128	2						130 Total standard cars
	128	2		6				136 Total standard cars including leased cars
	128	2	3	2			5	140 Cars built for DSR by TCRT
	128	2		2	6	4	5	147 Double-truck cars
			2			6	2	10 Single-truck cars
	128	2	3	2		4	6 5 2	152 Total cars, not including leased cars
	128	2	3	2	6	4	6 5 2	158 Total cars, including leased cars
163-180, 198-219, 223-232, 234, 236-254, 265, 266, 268								73 cars converted to one-man operation
268-274, 276-278								10 Cars converted to front exit
52, 57, 163, 255, 256, 285-288, 298-300								12 Double-end cars

5.59c

~~DULUTH ST.~~ RY.

TCRT STANDARD CARS

Qty.	Numbers	Not Rebuilt	Front Exit	One-Man
12	151-162	151-162		
15	163-177			163-177
1	178			178
4	179-182	181-182		179-180
15	183-197	183-197		
6	198-203			198-203
11	204-214			204-214
5	215-219			215-219
16	222-237	222,233,235		223-232,234,236-237
4	238-241			238-241
10	242-251			242-251
3	252-254			252-254
6	257-262	257-262		
4	263-266	263,264		265,266
4	267-270	267	268-270	268
8	271-278	275	271-274,276-278	
6	289-294	289-294		
130		48	10	73
===		==	==	==

242-278 were Class L-8 with the sliding motorman's cab door.

Rebuilding Dates

Front Exit: 1923

One-Man:

Rear door for emergency only:

1924: 163,165-166 | Originally relocated motorman's cab door only.
1925: 164,167 | Rear exit added later.
1926: 168-169,177

Rear door treadle operated:

1928: 170-176,178-180 (treadle added 3-29); 210-213,215-219,244.
1929: 208,223-226,228-232,234,237-239,241-243,245-254,265.
1930: 198-207,209,214,227,236,240,266,268.

Double end:

1934: 163.

DSR Car #	Date Built	TCRT Car #	Date Sold	Rebuilt Frt.Exit	Rebuilt One-Man	Rebuilt Dbl.End	Disposition	
151	8/9-1900	I 833	1901				BS 5-31	
152	8/9-1900	I 834	1901				BS 4-31	
153	8/9-1900	I 835	1901				BS 5-31	
154	8/9-1900	I 836	1901				BS 3-31	
155	8/9-1900	I 837	1901				BS 5-31	
156	8/9-1900	I 838	1901				BS 4-31	
157	8/9-1900	I 839	1901				BS 5-31	
158	8/9-1900	I 840	1901				BS 5-31	
159	8/9-1900	I 841	1901				BS 5-31	
160	8/9-1900	I 842	1901				BS 5-31	
161	8/9-1900	I 843	1901				BS 3-31	
162	8/9-1900	I 844	1901				BS 4-31	
63	11-??-01	Incline car					BS ?-11	
163	4-??-04				8-26-24	10-08-34	DB ?-39	(Retired 7-39)
164	4-29-04				8-24-25		BS 10-37	
165	4-30-04				8-26-24		BS 11-37	
166	5-01-04				8-28-24		BS 7-38	
167	5-02-04				8-24-25		BS 11-37	
168	5-10-04				1-29-26		BS 2-38	
169	5-12-04				1-30-26		AD 1-6-27	
170	5-15-04				2-18-28		BS 5-39	
171	5-16-04				2-18-28		DB ?-39	(Retired 1-39)
172	5-20-04				3-20-28		BS 3-39	
173	5-30-04				3-20-28		BS 5-39	
174	6-10-04				4-10-28		BS 3-39	
175	6-15-04				4-10-28		BS 3-39	
176	6-??-04				5-03-28		BS 4-39	
177	6-30-04				6-26-26		BS 2-38	
178	2-13-05	I1043	2-23-05		5-03-28		BS 6-39	
179	6-15-05	1111	8-24-05		5-31-28		BS 4-39	
180	6-06-05	1108	6-16-06		6-02-28		BS 5-39	
181	6-08-05	1109	6-16-06				BS 6-35	
182	6-10-05	1110	6-16-06				BS 4-35	
183	9-03-06						BS 6-35	
184	9-05-06						DB ?-35	(Retired 7-34)
185	9-07-06						BS 5-35	
186	9-09-06						BS 8-35	
187	9-11-06						BS 10-35	
188	9-13-06						DB ?-35	(Retired 9-35)
189	9-15-06						BS 6-35	
190	9-17-06						BS 7-35	
191	10-11-06						BS 6-35	
192	10-15-06						BS 9-35	
193	10-17-06						BS 6-35	
194	11-02-06						BS 5-35	
195	11-04-06						BS 6-35	
196	11-10-06						BS 6-35	
197	11-15-06						BS 5-35	

DSR Car #	Date Built	TCRT Car #	Date Sold	Rebuilt Frt.Exit	Rebuilt One-Man	Rebuilt Dbl.End	Disposition
198	3-10-08				5-29-30		BS 5-39
199	3-10-08				5-29-30		BS 5-39
200	3-16-08				4-12-30		BS 5-39
201	3-27-08				5-06-30		BS 6-39
202	4-10-08				4-12-30		BS 7-39
203	5-10-08				3-20-30		BS 6-39
204	6-09-09				3-20-30		BS 8-39
205	6-09-09				8-30-30		BS 7-39
206	6-09-09				5-06-30		BS 6-40
207	6-10-09				7-31-30		BS 6-39
208	6-11-09				10-31-29		BS 8-39
209	6-14-09				6-27-30		BS 7-39
210	6-15-09				10-18-28		BS 11-40
211	6-16-09				11-13-28		BS 6-39
212	6-18-09				11-13-28		BS 7-39
213	6-21-09				9-09-28		BS 7-40
214	6-23-09				7-31-30		BS 8-40
215	5-26-10				9-02-28		BS 8-39
216	5-28-10				9-09-28		BS 9-39
217	6-03-10				12-17-28		BS 9-40
218	6-04-10				12-17-28		BS 4-39
219	6-06-10				9-02-28		DB 11-40
220	3-15-11 } Incline cars						SS 9-39 W.E. I&M Co.
221	3-15-11 }						SS 9-39 W.E. I&M Co.
222	5-23-11						BS 5-36
223	5-25-11				3-10-29		BS 6-40
224	5-31-11				12-07-29		BS 8-39
225	6-02-11				10-31-29		BS 9-39
226	6-06-11				6-12-29		BS 6-40
227	6-08-11				1-31-30		BS 7-40
228	6-09-11				12-28-29		BS 2-40
229	6-10-11				9-16-29		BS 2-40
230	6-15-11				12-28-29		BS 4-39
231	6-17-11				7-03-29		BS 6-40
232	6-19-11				6-12-29		BS 9-39
233	6-20-11						BS 6-36
234	6-21-11				2-13-29		BS 5-39
235	6-23-11						BS 4-36
236	6-24-11				6-27-30		BS 7-39
237	6-24-11				4-02-29		BS 6-39
238	2-16-11	I1482	6-28-11		12-07-29		BS 9-40
239	2-18-11	I1483	6-28-11		8-23-29		BS 4-40
240	2-18-11	I1484	6-28-11		2-22-30		DB 11-40
241	2-18-11	I1485	6-29-11		2-13-29		BS 4-39
242	5-24-12				10-08-29		BS 8-40
243	5-27-12				7-05-29		BS 12-39
244	5-28-12				10-18-28		BS 4-40

DSR Car #	Date Built	TCRT Car #	Date Sold	Rebuilt Frt.Exit	Rebuilt One-Man	Rebuilt Dbl.End	Disposition
245	8-02-12				3-30-29		BS 7-39
246	8-04-12				10-08-29		BS 2-40
247	8-06-12				4-20-29		BS 8-40
248	8-07-12				7-25-29		DB 7-11-39
249	8-09-12				5-15-29		BS 6-40
250	8-11-12				4-20-29		BS 7-39
251	8-11-12				7-25-29		BS 6-40
252	8-11-12	I1564	11-13-12		3-14-29		BS 7-39
253	8-12-12	I1565	11-13-12		8-23-29		BS 9-40
254	8-26-12	I1566	11-13-12		5-15-29		BS 10-39
255	2-02-01	868	12-19-12			12-19-12	BS 1939 (Retired 9-39)
256	5-28-01	869	12-19-12			12-19-12	BS 1939 (Retired 9-39)
257	9-24-14						BS 3-36
258	9-24-14						BS 4-36
259	9-24-14						BS 3-36
260	9-24-14						BS 4-36
261	9-24-14						BS 10-35
262	9-24-14						BS 6-36
263	12-18-15	I1789	5-13-16				BS 3-36
264	12-18-15	I1790	5-13-16				AD 9-21-17
265	12-18-15	I1791	5-13-16		9-16-29		BS 9-39
266	12-18-15	I1792	5-13-16		2-22-30		BS 8-39
267	12-08-14	I1724	7-27-16				BS 6-36
268	11-30-14	I1719	7-27-16	11-23	1-31-30		CS 6-39 DM&IR RR $1200
269	11-25-14	I1716	7-27-16	11-23			BS 5-35
270	12-05-14	I1722	7-27-16	11-23			BS 10-34
271	6-01-17			10-23			BS 9-35
272	6-01-17			11-23			BS 6-35
273	5-21-17			10-23			BS 8-35
274	5-21-17			10-23			BS 5-35
275	6-01-17						BS 6-35
276	6-01-17			10-23			BS 10-35
277	6-01-17			11-23			BS 8-35
278	6-01-17			11-23			BS 8-35
279-284 were TCRT 1672,988-991,1673 leased from 12-24-17 to 10-19-20.							
285-288 were Park Point Traction Co. 10-11,20-21 acquired 9-1-17.							BS 7-31 (285-87)
							BS 6-31 (288)
289	12-04-06	1202	10-20-18				BS 6-36
290	12-03-06	1204	10-20-18				BS 7-36
291	11-23-06	1212	10-20-18				BS 7-36
292	3-08-07	1231	10-20-18				BS 7-36
293	3-08-07	1232	10-20-18				BS 6-36
294	3-15-07	1234	10-20-18				BS 7-36

DSR Car #	Date Built	TCRT Car #	Date Sold	Rebuilt Frt.Exit	Rebuilt One-Man	Rebuilt Dbl.End	Disposition
Single Truck Birney Cars built by American Car Co.:							
295	9-19	Order # 1213	Single-end				BS 4-38
296	9-19	{	"				BS 3-38
297	9-19		"				DB 1938
298	9-19	Order # 1214	Double-end				BS 10-38
299	9-19	{	"				BS 10-38
300	9-19		"				BS 11-38
Lightweight Cars built by Lightweight Noiseless Electric Street Car Co.:							
301	4-25						BS 4-38
302	4-25						BS 4-38
303	4-25						BS 3-38
304	4-25						BS 6-38
305	4-25						BS 6-38
Single Truck Closed Cars built by LaClede Car Co.; Rebuilt Double End by DSR:							
52	5/7-92					6-22-19	BS 7-31
57	5/7-92					5-16-19	BS 7-31
Snow Plow built by TCRT: single end							
4/146	11-10-17						DB 1940
1/141	1911	Wrecker					
63	1901	incline car					

Abbreviations used:

BS	Body Sold
DB	Dismantled and Burned
AD	Accident Damage (Destroyed in Wreck)
SS	Sold for Scrap
CS	Car Sold Complete

Supplemental Information

264 was wrecked September 21, 1917, on the C.StP.M.&O. Ry. croosing at ~~13th St~~ Winter St. and Hill Ave. in Superior. No passengers, Conflicting accounts

164 was wrecked January 6, 1927, when it was rammed broadside by the G.N. Ry.'s "Gopher" passenger train at the 21st St. crossing in Superior. Five streetcar passengers and the locomotive fireman were killed.

220-221 were sold for scrap to the West End Iron & Metal Co. in 1939.

248 was dismantled and burned in the carhouse yeard. It was the last streetcar to operate in Duluth and was completely stripped by souvenir hunters.

268 was sold complete to the D.M.&I.R. RR in June; it became their diesel-electric motor car W56.

In December 1919 there were 112 cars in Duluth, 41 in Superior.

Disposition of DSR & SRTR cars

SOUTH ~~DAKOTA TRACTION LINE ROSTE~~RS

Deadwood Central ~~Lines~~
(~~Burlington & Missouri River RR; CB~~&Q)

~~12150~~ ~~Three foot gauge~~--New
~~12151~~
~~12152~~
To St. Cloud Public Service Co. DSR 69, 71, 76, 77 June 15, 1910
To Aberdeen DSR 113, 115, 119, 120, 125, 126, 129 Sep 28, 1910
~~Aberdeen Railway~~

1	LaClede Car Co	29'3" (1894)	Ex SRTR/DSR #125	10-1910
2	LaClede Car Co	29' 3" (1894)	Ex SRTR/DSR #126	10-1910
3	LaClede Car Co	29'3" (1894)	Ex SRTR/DSR #129	10-1910
4	Northern Car Co SE	26'9"(1891)	Ex SRTR/DSR #119	10-1910
5	Northern Car Co SE	26'9"(1891)	Ex SRTR/DSR #113	10-1910
6	Northern Car Co SE	26'9" (1891)	Ex SRTR/DSR #115	9-1910
7				
8				
9	Northern Car Co SE	26'9" (1891)	Ex SRTR?DSR #116	5-1911
10	LaClede Car Co	29'3" (1894)	Ex SRTR?DSR #127	5-1911

?	Northern Car Co SEST	29'11" (1891)	Ex DSR #46	6-1911
?	St Louis Car Co	(1893)	ExSRTR/DSR #120	10-1910
?	TCRT snowplow		ExTCRT #16	1910
?	8 bench, open, ST, Cable car trailer		Ex SPCR #203	1911
?	8 bench, open, ST, Cable car trailer		Ex SPCR #205	1911
?	closed, ST cable car trailer		Ex SPCR #303	1911
?	closed, ST cable car trailer		Ex SPCR #308	1911
?	open, ST motor car		Ex SPCR #601	1911
?	open, ST motor car		Ex SPCR #631	1911

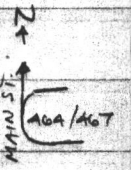
SRTR.... Superior Rapid Transit Railway (Wis)
DSR..... Duluth Street Railway (Minn)
TCRT.... Twin Cities Rapid Transit
SPCR.... Saint Paul City Railway
SE... single end
ST... single truck

Dakota

By 1902 U.S. Census, only one system was left:
Rapid City St. Ry. 2.00 miles of track (25 lb T rail),
2 closed horse cars and 3 horses.

By 1907 U.S. Census the only system listed is the Sioux Falls Traction System (see write-up on that system)

Aberdeen Ry.



apparently opened during 1910; ordered ~~per~~ SRS 1910
7 closed cars and 1 Plow/Work

Instead ~~=~~ purchased used equipment from Duluth and Twin Cities:

1910 (1) TCRT Snow Plow #16 (double track)

1910 (8) DSR ~~Sgl Trk~~ Closed Pssgr Motors:

46	Northern 1891	Duluth
113, 115, 119	Northern 1891	Superior
120	St. ~~Louis~~ 1893	"
125, 126, 129	~~La Clede~~ 1893	"

1911 (2) DSR ~~Sgl Trk~~ Closed Pssgr Motors

116	Northern 1891	Superior
127	La Clede 1893	"

1911 (2) SPCR 25' Open deck roof Trailers Sgl Trk
203, 205 } La Clede 1888

1911 (2) SPCR 16' Closed Trailers Sgl Trk
303, 308 } La Clede 1888

1911 (2) SPCR 28' Sgl Trk Open Motor Cars
1601, 1631 } La Clede 1893

Total of the above is: 10 closed motors, 2 open motors, 2 closed trailers, 2 open trailers, 1 snow plow = 17 cars tota

SECTION 6

Section 6

SERVICE CARS

Street railways require a variety of equipment to build, repair and maintain their rail lines. These are variously referred to as service cars, work cars, utility cars or non-revenue cars.

Inasmuch as the cars are intended to perform a specific function or combination thereof, most of them have been designed by the master mechanic and/or the superintendent, and have most often been built in the company's shops. Built primarily for utility, along functional lines, little thought is generally given to style or aesthetic values, a good portion of them being rebuilt former passenger cars. DSR had the usual variety of such cars.

Unlike most railways, who number their service cars in a separate series, DSR, for reasons unknown, assigned numbers to both its service and passenger cars in one continuous series. This method, therefore, presents some difficulties in any systematic or chronological listing. For a complete, combined listing, see 5.60.

DSR also chose to assign two numbers to many of its service cars. In addition to an assigned number in the basic numbering system of all cars, some service cars bore a second number for those within a particular classification. For instance, snow plow 140 was third in a series of five plows, and was referred to as 3/140 or 3-140 or $\frac{3}{140}$ or plow 3.

In addition to this, DSR used a group number for each type of car. This was not used as an identification or reference, but used, primarily, instead, for accounting purposes.

6.1 WRECKER, DOUBLE TRUCK, 1/141 GROUP 101

Although of impressive appearance, and with a short boom (13'6") for heavy lifting, wrecker 1/141 had a lift rating of only eight tons, powered by 7 1/2 horsepower motors. "Wrecker" therefore, would appear to be a misnomer. Frequent references to its being a crane car seem more appropriate, the duties it most frequently performed.

It was built in TCRT shops in 1911, was 38'5" long, had a large cab at one end and a large open area, with side-boards, that stored jacks, block-and-tackle, chains, timbers, tools, and, some-times, a truck and/or truck parts. The crane assembly was obtained from Bay City Industrial Works and mounted on the TCRT-built car body. Because of its great weight, 52,710 lbs, it was used to advantage in extreme situations to supplement the overworked snow plows in breaking through hard-packed snow to reopen snowbound tracks.

6.2 SNOW PLOW, DOUBLE TRUCK, DOUBLE END, 1/139, 2/66, 3/140 GROUP 102

In 1898, DSR shops built snow plow 1/139, a heavy, double-truck, double-end, 41'6" plow, the first in an excellent fleet of snow plows.

A similar plow, 2/66 was built in the company shops in 1903, and 3/140 was built in the shops in 1906. These three plows had wood underframes.

6.3 SNOW PLOW, DOUBLE TRUCK, SINGLE END, 4/146 GROUP 103

Along with passenger cars and sub-station equipment, plow 4/146 was included in DSR's request to a federal agency for emergency aid during the war in 1917 (see 5.28). The 36'8" single-end, steel underframe, 64,300-pound plow was ordered in July, built in TCRT shops in November 1917, and delivered to DSR a few days later. DSR repaid the adjusted principal sum in 1921, gaining title to the plow. This and identical TCRT plows 75 - 80 were designed and built by DSR's former, capable master mechanic, Walter J. Smith.

All three group 102 double-end plows 1/139, 2/66, 3/140 had 4' 9" X 12' 2" X 3/8" steel shear blades at both ends of the plow; plow 4/146 at one end. All three group 102 plows had 3' x 13'6" X 3/8 steel wing blades on both sides of the plow; 4/146 group 103 on the right side only. All were extended and raised by inboard electric motor winches connected by chains to the blades. All were gravity lowered and pulled in by a block and tackle.

All plows were equipped with 75 hp motors, a considerable amount of power for that era...up one side of the street and down the other: clear street!

Plows 1, 2, 3, 4 were equipped with large salt bunkers inside the car body. Dropping of salt was controlled by the motorman.

All plows had a 3-man crew: motorman, wingman and trolley man, most of whom came from passenger car operations.

Plow 2 was assigned to the Superior division; plows 1, 3, 4 to the Duluth and Interstate divisions. For assignments and uses of the plows, see 4.19.

6.4 SNOW PLOW, SINGLE TRUCK, DOUBLE END, 5/147 GROUP 106

At a time not known but prior to 1917 PPT retired four single-truck, Laclede-built, passenger cars that had been purchased in May 1899 (see 5.36). One of these was reinforced and equipped with a double-shear (wedge) snow-plow blade at both ends and a wing plow on both sides. It was 32'9" long over the plows, and eventually appears as PPT number 12. How a little, light-weight, single-truck 30 h.p. plow like this was able to cope with Park Point's tremendous snow problems is difficult to imagine. DSR acquired the plow on December 8, 1917 in the 1917 acquisition of the PPT property, and continued to use it until the end of rail operation on The Point. DSR numbered it 5/147, although official DSR records show that it continued to be referred to as "number 12" until the end of Park Point operations; it was scrapped in June 1931. It had been upgraded—just prior, fortunately, to the big storm of 1922—with a truck from car 82, two motors and controllers from car 286, and winches from plow 1/139.

6.5 OTHER NOTES ON SNOW PLOWS/SWEEPERS

A brief remark in a DSR ledger indicates that one 'Improved Snow Sweeper and Plow' was purchased, for $950, from the Brooklyn Railway Supply Co. in March 1891. An October 1890 ledger entry records "1 set snow plow journal boxes for $20." From this, it appears that DSR had at least two snow plow/sweepers at these early dates. Neither of these pieces of equipment shows up on the company's equipment rosters; perhaps snow sweepers were inept at handling Duluth's heavy snows.

An August 13, 1900 audit report listed two 'push plows', two 'walkaway' plows, two 'GE double-end sweepers', and a standard plow in Superior. Little else is known about them, or how they were used, or when they were retired.

Other than these brief remarks, nothing is known of how DSR cleared snow from its tracks prior to 1898 when DSR built its first snow plow (see 6.2). Snow-shoveling gangs were commonplace in that early era, so DSR quite probably utilized this method, when necessary, for snow removal.

In addition to Park Point's snow plow 5/147 (see 6.4), reference is made in company records to another plow. In June 1906, ITC acquired nine assorted second-hand passenger cars. At this same time, ITC purchased a "snow plow attachment" for $25.00 from DSR. In December of the same year, DSR built a "snow plow attachment" for DBL for $181.00. It is quite probable that these were snow-plowing devices that could be attached to their passenger cars.

All four DSR double-truck flat cars were equipped with snow scraper blades on both ends and both sides during the Winter months beginning in 1930 to clear yard tracks and assist the snow plows in emergency snow situations. These were referred to as "work-car snow plows". The blades were removed in the Spring. See also 6.6.

To cope with snow on the isolated Highland line, cars 255 and 256 were equipped with both V and small wing plows during the winter of 1922-23 and thereafter. So also was Park Point car 286 equipped.

Following the extremely heavy snowfalls of 1917, DSR Master Mechanic, R. J. Crawford, recommended the acquisition of one additional snow plow each for Duluth, Superior and Park Point, in addition to the purchase of plow 4/146. Management, instead, expended considerable funds and effort to upgrade its snow plows, related equipment and procedures. Park Point plow 5/147 was re-equipped with electric winches; the inadequate 40-hp motors were replaced with those of 50-hp; and its truck frames, motors and controllers were upgraded.

It is difficult to sort out the mixed bag of official and semi-official information on Superior's snowplows/sweepers prior to the 1900 merger. In that merger, DSR acquired two 27'6" single-truck double-end snow sweepers from SRT. These had been ordered November 7, 1890, built by the N.W. Houston Electric Co. and delivered to DCSR in January 1891. They had two 50-hp motors for propulsion and two of the same to propel the brooms. Although DCSR numbered these 1 and 2, DSR assigned them numbers 137 and 138, and they appear that way on DSR's roster. However, from "...an old notebook of Mr. Ingersol..."—SRTR Superintendent 1894-1900—his 1894 notes show:

General Electric Sweeper	28'0" Heavy Type	1
Snow Plows 1-2	27'6"	2
Total Service Cars		3

Semi-official records indicate that SRTR also had two "push-type snow plows". And a March 31, 1895 DSR voucher shows "Electric Plow" delivered "...to foot of Garfield Ave." for SRTR. All of these equipments—the push-type plows, the electric plows and snow sweepers—seem to have been retired/scrapped prior to or at the time of DSR's acquisition of the Superior properties.

Single-truck car 129 was equipped with snow plow blades in 1908 for use on the then recently opened Allouez line.

Nothing is recorded to substantiate the rumors that DSR used—or even experimented with—rotary snow plows.

6.6 FLAT CAR, DOUBLE-TRUCK, DOUBLE-END, 1/64, 2/65, 3/96, 4/97 GROUPS 105, 105A

The most common service cars—and work horses of ~~any property~~—were the flat cars (also commonly referred to as work cars), utilized for a multitude of duties: hauling supplies, equipment, coal, coke, ashes, cinders and sand in the shop area; hauling gravel, dirt, rail, ties, ballast, poles, timbers and other material to and from construction sites; and as tow cars and snow plows on occasion.

Steel-framed flat cars 1/64, 2/65, 3/96, and 4/97 were built in the company shops in 1901, 1902, 1907 and 1912 respectively.

The control cabs of cars 1, 2 and 3 went through a considerable morphosis in their early years. Car 1, and perhaps others, had a not-very-beautiful open-frame, off-set half cab at one end, primarily to support the trolley pole, and a meager, waist-high cab at the other. In about 1907, the half-cab was enclosed. Prior to 1912, a second rebuilding provided half-cabs at both ends. And it was at this time that 22", hinged side-boards were added. Finally, in December 1916, fully-equipped and restyled 4 1/2' x 4 1/2', centered and pedestal-mounted cabs become standard on all four cars. Although the cars were built for double-end operation, only one trolley pole was provided. Although cars 1 and 2 were originally equipped with Brill and other little-known trucks, they were equipped with Twin City Work Car (TCWC) trucks by 1907, and were original on cars 3 and 4. All had K6 controllers.

In April 1917, as an aide in construction of the RIVERSIDE/MORGAN PARK line, car 3/96 was equipped with two 1-ton electric chain hoists mounted on I-beam wing derricks for handling rail, poles and timbers.

All four cars were assigned to the Duluth division but were used over the entire system. All were equipped with snow plow blades in May 1930 (see also 6.5).

6.7 FLAT CAR, SINGLE TRUCK, SINGLE END, 5/142, 6/143, 7/144, 8/145 GROUP 109

DSR converted four single-truck passenger cars into single-truck, single-end flat cars in ~~June~~ 1917 when additional flat cars were needed for construction of the RIVERSIDE, MORGAN PARK and NEW DULUTH lines. Car bodies were removed from passenger cars 85, 61, 49 and 42, which then provided frames, trucks, motors and ~~electrical~~ to build flat cars 5/142, 6/143, 7/144, 8/145 respectively. These had an offset cab at one end only, had drop sides, and were 21' in length. After their initial use, cars 142 and 143 were used primarily by the roadway department for construction and maintenance work. 143 was equipped with a swivel block and chain ~~hoist~~ crane. Cars 144 and 145 were used in the shop area, 144 for hauling coal, and 145 for hauling ashes. Car 142 had welding, thermite, rail grinding, air compressor, cement mixing and other equipment semi-permanently mounted at various times.

Car 143 was assigned to Superior; the other three to the Duluth division.

6.8 TOWER CAR, DOUBLE TRUCK, 1/67 GROUP 104

After a short tour of duty on the HIGHLAND AVE. line, open car 95 (see 5.8) was retired. There seems to be no record of its whereabouts or service thereafter until 1904.

In that year, DSR built a tower* ~~(line)~~ car in its shops which it numbered 1/67. The 30'4" car had Bemis trucks, two controllers (for double-end operation), a 5'6" x 6'8" swivel platform, an offset cab at one end, and all the necessary reel stands and storage space required for a fully-equipped tower car. It was based at the Duluth car house, but used over the entire

* Also referred to, variously, as line cars, wire cars and reel cars.

system; retired in 1933.

Brief company equipment notes indicate, quite conclusively, that the trucks, motors, controllers and other electrical and mechanical equipment from car 95 were used in the building of this tower car.

For additional notes on tower cars, see 6.10.

6.9 TOWER CAR, SINGLE TRUCK, 3/148 GROUP 107

DSR rosters, which show Lacledo Car Co as the builder, are therefore in error.

It is difficult to trace the metamorphosis of what eventually became Park Point tower car 3/148. When acquired by DSR in 1917 (when DSR acquired PPT), it had been PPT number 13. Photos of this car show construction details that quite positively identify it as a Northern Car Co. product, ten of these cars having been built for SRTR (see 5.39a). Two of these, 110 and 117, ~~eventually~~ went to Park Point (see 5.36), and it was one of these that probably became tower car 13. Converting a passenger car like this to a tower car was a simple matter of placing a fixed platform— 5'8" x 5'10" in this instance--on the roof of the car, and adding railings and a ladder or two.

in 1906

27'4"

It was reported unserviceable in 1928, and was scrapped when found stored and in very poor condition when all remaining cars and equipment were removed from the Park Point carhouse in March 1930.

6.10 OTHER TOWER CARS

Except on private rights-of-way, and in other situations where their use is not possible, rubber-tired trucks have replaced the tower cars (also commonly referred to as wire cars and line cars) in the construction, repair and maintenance of the overhead trolley wires and supporting devices. Chief features of these tower cars included an elevated platform, preferably adjustable, provisions for mounting reels of copper trolley wire and steel cable, and handy storage space for block-and-tackle, rigging, insulators, hardware, fixtures and tools. Many such cars were also provided with a boom for setting poles, although DSR did not.

There seems to be no information on how DSR's first trolley wires (1890-1891) were erected, but quite probably with a horse-drawn wagon upon which was mounted a tower/platform. Superior had one as late as 1910. When DSR received delivery of passenger cars 47-62 in 1892, car 51 was removed from assignment as a passenger car and converted to a tower car, group 21. It was, for reasons unknown, referred to affectionately as 'St. Peter'. There was probably urgent need for a tower car at that time because of the extensive line construction that was taking place: the LAKE AVE. and GARFIELD AVE. lines. Tower car 51 was eventually assigned to the Superior division.

Several of Superior's older single-truck cars went into semi-retirement as larger cars were assigned. One of these, 112, was converted to a tower car in 1910 to fill the need for such a car when DSR completely rebuilt the BILLINGS PARK, SOUTH SUPERIOR and BELKNAP lines that year and the year following. Car 111 was similarly converted ~~at approximately the same time~~ in 1911. Both cars were retired and/or scrapped in 1912.

DSR seems to have utilized two horse-drawn tower wagons during construction of the RIVERSIDE, MORGAN PARK and NEW DULUTH lines. These were dismantled/scrapped in June 1918.

6.11 SUPPLY CAR, SINGLE TRUCK, DOUBLE END, 88 GROUP 108

Closely related to the flat car was the supply car which most street railways had in a much larger proportion (both single- and double-truck) than DSR, which had only three, all single-truck cars. Supply car 88 evolved from passenger car 31 which was partially destroyed in an 1895 fire. It was single-truck, double-end, completely closed, 20'5" long. Its primary function was that of a sand car for sanding rails on the 'hill' lines in Duluth in the Fall season when fallen leaves on the rails created hazardous operating conditions (see 4.21).

6.12 OTHER SUPPLY CARS

Passenger car 62 was rebuilt as a double end supply car-group 21-in 1915 and assigned to the Superior division.

Car 131 was the sole survivor of the 35 single-truck SRT cars (all originally narrow gauge), obtained in the 1900 merger, and most of which had

double end

Another roller:

purchased in June 1911;

Co. records refer briefly

6.14 to a "10 ton road roller"; nothing

else is known. Was it rail-mounted?

~~DSR used it to~~. DSR is "now taking

care of all the paving — crushed rock? —

between its tracks." (Duluth NT 6-9-11

by ~~1905 16 cars~~

been retired and disposed of by 1913. With little or no modification (except perhaps the removal of seats), it was assigned to the Superior division, and served until June 1931 as a general-purpose supply car, tower car, tow car, and for other miscellaneous duties, group 21.

A semi-official SRTR 1894 equipment roster of Superior cars lists two 16-foot salt cars. These were probably former horse cars. Nothing else is known of them.

6.13 MOTORLESS GONDOLA CARS, SINGLE TRUCK, UNNUMBERED, GROUP 110

DSR had three unnumbered 15'3" by 6'2" by 3'4" motorless gondola cars, one in Superior and two in Duluth. Passenger cars 47, 49 and line car 51 were retired in August 1923. Their bodies, motors and electrical equipment were removed, and their frames and trucks were then used to build these motorless gondola cars, used primarily for hauling coal, debris and ashes in and out of the shop area.

6.14 ROLLERS, UNNUMBERED

With the proliferation of automobile traffic, streets with rails became dangerously rutted after each snowfall. In January 1928, DSR shops designed and built a unique device for reducing this hazard.

The rail-mounted device consisted basically of a sand-filled steel cylinder, 7' long and 28" in diameter, and upon which were mounted hardened steel cleats (teeth) which chopped and broke the compacted snow and ice formations as the cylinder rolled along the street, but designed not to damage the street surface. The cylinder was mounted on a four-wheel carriage which was towed behind plow 4, because of its lesser rear overhang. A second plow usually, but not always, followed to clear the street of the chipped ice that the roller left in its wake.

Although a rail-mounted vehicle, the device did not bear a number. Nor is there a record that it had an official nomenclature. The operating department referred to it as 'the roller', the shop order called it an 'ice breaker', the front office called it an 'ice cutter', and the employees who used it referred to it as 'Goliath'.

6.15 ELECTRIC SHOVEL, UNNUMBERED

On streets in which there were street car tracks, DSR was sometimes called upon to prepare the street for paving or repaving. DSR's unnumbered electric shovel, purchased for $7,950 from Thew Electric Shovel Co. in April 1922, when used with portable tracks and company service cars, was well equipped for this type of work. Provided with both flanged and wide-tread wheels, the electric shovel was able to operate both on rails and off, and was also used in the company's gravel pits and bulk materials handling yards. It had a 1/3-yard capacity bucket, one GECVC116 motor of 20-hp, and a CE1100 rheostat controller.

6.16 FIRE CAR, UNNUMBERED

DSR maintained an unusual car, provided a crew to operate it, and allowed the car to be operated on its tracks--a car that it did not own!

Park Point developed into a year-round residential community after the building of the Aerial Bridge in 1905. By the very nature of its operation, the bridge caused some delay to fire-fighting equipment dispatched from the mainland. To provide some measure of fire protection, the City of Duluth on May 5, 1907, authorized the purchase of one of ITC's passenger cars and its conversion into a fire car. It was originally one of four single-truck, double-end, 9-bench, open trailer cars purchased from Brownell Car Co., in 1891 for operation on the then-newly-constructed WOODLAND line. One of these four cars, car number 2, was removed from WOODLAND service in June 1893 (see 5.70), equipped with motors, controls and other electrical equipment, assigned number 92, and put in INTERSTATE service. In May 1900, the car was sold to ITC for operation on The Point, and became ITC number 5. We can reasonably assume that this was the car that the Duluth Fire Department purchased from ITC on July 31, 1907 for $650, and converted it to a fire car.

The conversion required no structural change to the car other than removal of portions of the seats. To equip the car for its fire fighting duties,

Road Machines included:

Kelly-Springfield steam roller 12 ton	2,500
Concrete mixer	825
Electric Welder	275
Imperial tie tamper compressed air	3,800
Rail grinder	1,100
10 Portable cross-overs ~~$100 each~~	4,000

359,000

Highland Ave. 9498'
348'
9842'

1,864

6.19 SERVICE CAR TRUCKS

DSR service cars were equipped with a variety of trucks. Among these were ~~those~~ some ~~that were~~ referred to as "DSR" trucks. Company records do not indicate specifically if DSR fabricated ~~the~~ type of trucks from TCL drawings, or purchased them direct from TCL

which began August 14, the Fire Department provided: an electric-motor-driven water pump, 1500 feet of 2 1/2" hose (which was stored handily in a large box that occupied the former seating area), two nozzles, 6 axes, 4 pike-poles, two 6-gallon Babcock extinguishers with extra charges, 14', 20', 30' ladders, and rubber coats, boots, and hats for the firemen.

The only markings on the car were "DFD" (Duluth Fire Department) on the dash below the headlights. ITC modified a former car house on the west side of Minnesota Ave. across the street from ITC's car house at 19th St. to house the car. The City's contract with DSR was terminated March 15, 1930. The car was dismantled in June 1931.

For the operation and maintenance of this unusual car, ~~please~~ see 4.36.

6.17 PARK POINT FLAT CARS

The Park Point line performed services not normally associated with street railway operations. Because of an almost complete lack of other forms of transportation, freight, fuel, household furnishings, building materials—even groceries—were delivered by trolley car. Two single-truck flat car trailers were utilized for this service until DSR acquired the line in 1917, at which time the service was terminated. One of the derelict, retired cars remained on the property until June 1931.

For this unusual operation, ~~please~~ see 4.36.

6.18 SPRINKLER CAR

Duluth seems to have come close to having a sprinkler car, a service which many cities arranged with street railways for washing and sprinkling streets on which there were street railway tracks, primarily for the removal of horse manure. In August 1902, DSR improvised such a device by placing two 1500-gallon tanks, sprinkler valves and other appurtenances on one of its double-truck flat cars to wet down the ballast on a track construction project. The same equipment was utilized in July 1916. Although it demonstrated its apparently excellent temporary use for street sprinkling, no permanent use seems to have been made of this device in Duluth or Superior, even though Council by resolution in October 1904 (and at other times) ordered DSR to sprinkle streets upon which it had tracks.

6.20

~~6.19~~ TRUCKS, AUTOMOBILES, ROAD MACHINES

In addition to DSR's trolley buses—see 5.58a—and its many gas buses—see 5.58b—there were several non-revenue vehicles: trucks and automobiles. Too numerous to list, here is a brief description: As early as 1914, DSR provided Ford, Cadillac, Packard and Franklin 'touring cars' for its staff. And as early as 1916, DSR purchased tower trucks, dump trucks and flat beds. Many of the early—1916-1917—truck purchases were aides in building the MORGAN PARK/NEW DULUTH lines, and the several purchases in 1935 were aides in the dismantling of the Superior trolley lines. Following the heavy snow-falls of 1922, most of the trucks were fitted with snow plow blades.

6.3 Altho the present day thrust for equal rights for minorities was ~~not~~ probably not a factor in a WWI war-induced shortage of men, DSR ~~implimented the alternative of~~ utilized women in its operating dept. where they served well as conductors. DSR referred to them as conductresses and car women. None of them were trained or used as motormen (motorwomen!). First hired May 10, 1918 20 women served during the war and postwar years. Through attrition, their numbers diminished. There were only five in Jan. 1924; the last was retired in May 1929 (see 1.9). ~~last in May 1929 (see 1.9)~~

DSR's strict code of employee work ethics probably produced some anxious moments in the initial period of hiring and duty assignments for these women, but the absence of civil libertarians & equal rights advocates in those days ~~made~~ simplified the procedures for ~~D management~~ DSR: ~~management~~ it was determined that management would hand-pick the motormen that were ~~would be~~ paired off with the women, and the women themselves participated in the pairings. Although the women were not permitted to work regular runs on the Interstate line, there ~~are~~ were instances that they did work Chic and holiday extras to the Fairgrounds and Billings Park. A special order issued for such an occasion stated: "As some of these runs are likely to be in charge of women conductors who have never practiced on the Duluth-Superior line, we expect all motormen to be particularly careful in the operation of their cars..."

A platform employee who was qualified as both a motorman and conductor was referred to as a "double-ender".

Snow Plow crews were a select group of operating dept employees. ~~noted for strength and durability/stamina, men who under extremely severe conditions, sometimes manned the plows for up to 18 hours.~~ These are described in 6.19

Say something about drivers of horse cars & fare collection.

Ask Ed about "3 bells": problem w. th passengers

Ask Ed about women conductors.

An Informational Price Change List Is being Issued to
Company Stores

SECTION 7

SECTION 7
STRUCTURES

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SECTION 7

STRUCTURES: OFFICES, CAR HOUSES, SHOPS, BRIDGES, INCLINES

7.1 DULUTH, 11th AVE. W.

Four narrow-gauge, 4-wheel mule cars, numbered 1 to 4, were purchased second hand,

St. Paul Street Railway

Four narrow-gauge, 4-wheel mule cars, numbered 1 to 4, were purchased, second hand, from the (SPSR), arrived November 12, 1882, and were hauled up 5th Ave. W. from the StP&O RR yards, and set on a narrow-gauge (3'6") single track that had been built from 8th Ave. W. to 3rd Ave. E. ~~on Superior St.~~ by A. B. McLean & Co. The cars, and those that followed, operated in the summer months only and sat on the Superior St. tracks through the Northern Minnesota winters of 1882, '83 and '84. Duluth's first mule/horse car service began July 6, 1883. For lack of facilities, ~~and entrance minor~~ the McLean Co. assisted DSR with maintenance and minor repairs of the cars on the street and at their shop at 5th Ave. W. Major repairs and repair parts were served by SPCR.

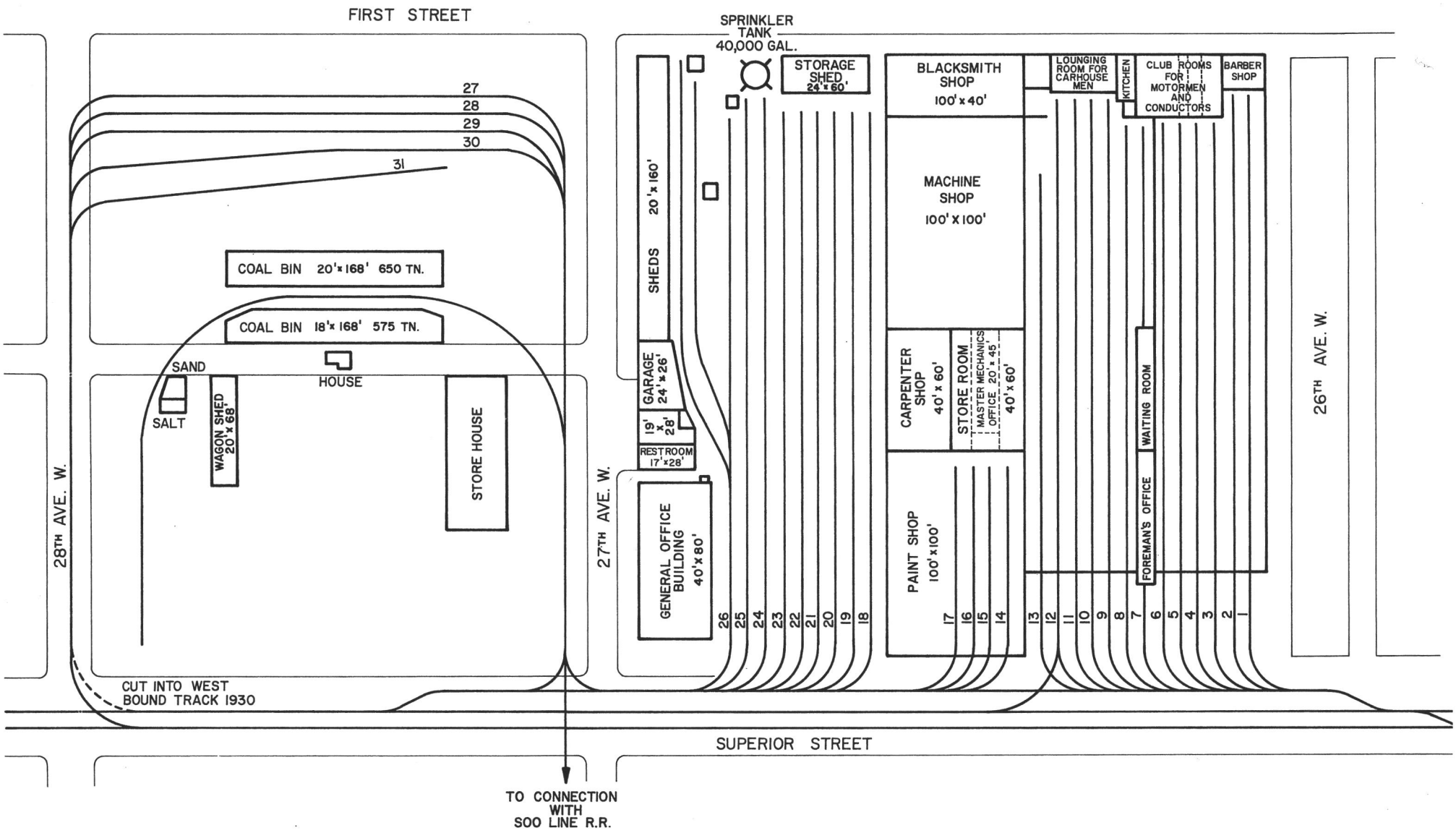
Contracts were issued to five companies in April 1883 for the construction of a stable and barn at 11th Ave. W. and ~~Superior St.~~ Michigan St. Little is known of the building. A photo shows a frame building built against a steep, rockcliff on the south side of Michigan St. at 11th Ave. W.: a 3-story building, two stories below street level, vacant, used later for a powerplant. Car tracks did not project or enter the stable. Mule/horse cars were maintained, repaired and stored on the street.

Russell Co. on July 15, 1916, and torn down by February 24, 1917.

DULUTH STREET RAILWAY

DULUTH MINNESOTA
CARHOUSE AND SHOPS
1925

1909 1908 1904 1893



7.2 DULUTH, 26th, 27th & 28th AVES. W.

While narrow-gauge horse cars were busily making their scheduled runs on Duluth streets in early 1890, there was much action backstage. On February 19, Tom Lowry, a director of DSR's affiliated ~~Duluth~~ Minneapolis Street Railway, was successful in obtaining $500,000 "...down east...", funds that were necessary to finance — among several other major projects — the construction of a car house in Duluth's West End... a project that took over 17 years to complete.

On April 28, 1890, the City approved a hotly debated franchise which allowed DSR to proceed with electrification, conversion to standard gauge, purchase of electric street cars and the building of a car house and shops at 26th & 27th Aves. W. on Superior St... no small task! Construction on the 150' x 225' brick and stone car house and shops began in summer 1891, and became operational in 1893, at which time the 11th Ave. W. facilities had been abandoned. The new facility's 13 tracks ~~each had maintenance/repair pits~~ provided space for 40 double-truck cars, and optional space for a wrecker and for snowplows in the winter months. Each track had maintenance/repair pits. The foreman's office occupied the forward (Superior St.) portion of track 7; employee club room, lounge and kitchen butted W. 1st St. ~~on that track~~. on that track.

The records do not indicate where and how major repairs were accomplished in those years until construction of these ~~major~~ repair facilities became operational on July 24, 1902, adding a 100' - tracks 14 to 17 - shop building. By February of the following year, a paint shop occupied the four track ~~area~~ front 100' X 100' area. Behind that was a 40' X 100' carpenter shop, and, behind that, a 100' forge and machine shop, and, behind that, butting W. 1st St., a 40' blacksmith shop. A 20' X 45' master-mechanic's office occupied the second floor over the carpenter shop.

Probably in anticipation of 15 more cars scheduled to arrive in April - June 1904, a large, 9-track car storage yard was built next west of the shops. These were referred to as tracks 18 to 26. Two spur tracks, from track 26, served a garage and storage sheds along 27th Ave. W.

A 90' high, 40,000-gallon water tower, for fire protection, was built over the far end of tracks 24 - 25 in 1909. The facilities now covered 6 lots, totalling 300' x 150'.

A contract was awarded to Alexander Roberts Co. on April 20, 1907 for construction of a 40' x 80' two-story brick office building "... of handsome design..." at the north-east corner of 27th Ave. W. Construction was completed in January 1908, and occupied February 23, at which time the 11th Ave. W. facilities were abandoned.

General offices had been established in the

First National Bank building, 21 W. Superior St., in October 1891. On November 19, 1899, they were moved to the 11th Ave. W. facility. And on February 22, 1908 to 29th Ave. W.

On June 7, 1938, the Master Mechanic's and General Foremen's offices were moved from the shop area to the General Office building, bringing all business trans-actions under one roof.

In 1911, a 300' x 400' rectangular city block between Superior and W. 1st Sts., and between 27th and 28th Aves. W., was developed by DSR into a multi-~~purpose~~ use property: 4 tracks for storage of work cars, electric shovel; 2 stub tracks for coal, salt and sand storage/dispenser sheds, store rooms and guard house.

The car house crowding that came about with the purchase and arrival of 5 Light Weights in 1925 required the movement of several older cars to two dead-storage tracks #27, 28 on the north side of the lot.

With the anticipated arrival of trolley buses in April 1934, tracks 1, 2, 3 & 4 were removed. In their place, a ramp, entrance and doors were erected on the W. 1st St. side.

With the conversion to an all-bus operation in Duluth in May to October 1939, the 13-track car house was converted to a bus garage.

In later years it was necessary to erect security fences around and on the property

7.3 DULUTH, 20th AVE. E. CAR HOUSE

Exciting times in early 1890: electrification, change to standard gauge, electric cars and plans for the building of a LAKESIDE line, an extension of DSR's EAST END line, which, at that time ended at 22nd Ave. E. A functional-style, ~~rectangular~~ severe rectangular brick car house was built in July 1890 on two 100' X 150' lots on the south-east corner of 20th Ave. E. & Superior St. This was variously referred to as Endion Car House, Bench St. Property and, for most purposes, as the 20th Ave. E. Car House. Simultaneously, it seems, DSR was ~~a~~ about to build its extensive car house, shops, ~~offices~~ and car storage areas at 26th / 27th Aves. W.

It became quite evident early on that simultaneous operation of two car houses was not practical. So DSR ~~abandoned~~ reduced operations here in the late 1890s, at which time a young Episcopal church group arranged with DSR to use a portion of the building for a Sunday School. An alter was placed and chairs (pews) were brought in. On Trinity Sunday — the first Sunday in June 1901 — a First Communion was served. The Bishop chose Trinity — appropriately — as the name of the new congregation / church / parish in October 1905. They grew quickly. Plans were finalized, and they bought the car house and both lots. On July 25, 1906 the walls of the car house crashed to the ground; a new church building was erected; and the first worship service was on June 1, 1907.

7. 4a DULUTH, AERIAL BRIDGES

For Aerial Bridge plans and events leading to its construction, see 2.12.

Under-water concrete piers to support the Bridge's two towers were poured in 1901, under contract with the Duluth Canal Bridge Co.

BIDS FOR THE BRIDGE'S CONSTRUCTION were opened March 25, 1901, but only one was received. The Duluth Canal Bridge Company was awarded the contract but abandoned the work. In February, 1904, the Modern Steel Structural Company of Waukesha, Wisconsin was issued a contract. Work began July 20, 1904. The Annual Report of Duluth City Officers for 1904 stated that the shopwork was excellent, all parts fitting perfectly without reaming or drifting. ***The bridge was completed during the winter of 1904-05, at a cost of $108,000.***

Length of th Bridge's top span was 394' long, and 51' wide. The bottom of the span — clear height — above ground, in its lowered position, was 135'; its clear hight above water level was 186'.

The suspended car was 48' wide; a double-width, 34' ~~width~~ wide roadway with 7' wide walks/cabs/enclosures on both sides. The ~~suspended~~ car was capable of carrying 62 tons. Two GE 67 motors, 1" cables and a 9' drums propelled the car at 4 mph.

With a full compliment of dignitaries at hand, a trial trip of the car was made on February 23, 1905. Regular, scheduled service began the next day. ~~Er~~ Round trips took about 10 ~~mint~~ minutes. The 300' crossing took 5¢ and 2½ minutes.

The car made its last trip at 8:45 a.m., Monday July 1, 1929.

7.4b

7.4b DULUTH, LIFT BRIDGE

It became obvious in the late 1920s that the Bridge was becoming incapable of handling the considerably increasing street car, auto and foot traffic. Plans for a replacement bridge had already begun in the late 1928s. Consulting engineers submitted plans and specs for ~~B~~ a lift-type Bridge in September. These were approved. The City solicited bids which were to be opened on October 26. A contract in March 1929 went to the KC Bridge Co. to build a lift-type bridge.

Although the Aerial Bridge operated until July 1929 preliminary construction of the Lift Bridge began in April. Design of the new bridge incorporated major structural elements of the original Aerial Bridge. Reinforcements were added inside the two original towers to support the fixed head span which was raised 42' on October 19.

Work, with much vigor, commenced on November 29— Thanksgiving Day — on ~~the~~ construction of the 900 ton, 386' lift span. With the winter-time shut down of navigation through the Canal, it was good fortune to ~~build the lift span~~ be able to build the span in its lowered position.

The span was built with walkways on both sides. Two lanes for vehicles, including double street car tracks and trolley wires ~~were~~ occupied the open center portion on the span and on both approach ramps of 7% grade.

Two concrete counter-weights of 450 tons each, moving vertically within each tower by 1 7/8" diameter steel cables. These were propelled by four 95 hp DC electric motors mounted in the operator's control cab, midway in the span. Power for these motors came, originally, from storage batteries. Battery recharging power came from City lines and a back-up generator, which could be switched, electrically, to the motors in an emergency.

Major changes were made in 1985-86: four new 100 hp motors were installed. Electricity for their operation came from City lines.

When in its lowered position, the bottom of the span is 10' 9" above water level. When raised, ~~it is 138'~~ the clear-lift height is 138'

The Bridges were (are owned and operated 24 hrs a day by the City. The Lift Bridge is toll free.

The Lift span was ~~lowered~~ built in its top-most position. The span was lowered Jan 5, 1930, and foot traffic was permitted. A test street car crossed on Feb. 8. Scheduled operation of cars ~~on the PARK POINT line~~ began ~~March 2~~ across the LIFT BRIDGE to Park Point began March 12. The first lift of the span for passage of a ship was March 29. The last street car to cross was on June 15, 1931.

7.5 DULUTH, PARK POINT

Park Point's early years of narrow-gauge, dual-gauge and standard-gauge operations were a primitive, confusing mess. There is no record, unfortunately, of a stable, car house or office during those several, early years of horse car operations.

By its very nature, the Aerial Bridge caused some delay for the City Fire Dep't ~~equipment~~ to get its fire-fighting equipment across the Canal to Park Point.

To provide some measure of fire protection, DSR, ~~on May 3,~~ ~~1906~~ converted one of its single-truck, open platform passenger cars to a fire car: removal of seats and windows, and installation of ladders, hose, electric water pumps and other equipment (see 6.16). The City-owned car went into service on July 31, 1909. It was stored in a small, single-track frame former car house on a 68' X 100' lot on the northwest corner of 19th St. Another undated photo shows a similar, single truck open-platform passenger car standing on one of two tracks in front of what appears to be a two-track frame car house on the same location, as above, with an uncovered single track located on its Bay side. However, the tracks seem to have been laid on higher ground, probably as protection from wave action/errosion from St. Louis Bay waters.

On May 3, 1906, construction began on a fine, new ~~#6 [illegible]~~ brick and concrete building which, in a

photo, appears to be a single-track car house, shop and office on the southeast corner of 19th St. At an unknown date — probably soon thereafter — a two-track car house was added to the east side of the building, which now measured 46'X152'... and two storage tracks were added on the east side.

On March 19, 1930, the building ("fire hall") was acquired by the City and used thereafter for a conventional, City fire truck.

ITC and DSR became financially and otherwise involved in the 1905 building and operation of the White City amusement park at the south end of the line, and of a Pavilion at Oatka Beach — 39th St. Nothing is known of the physical aspects of these buildings which were shut down after the 1908 season

2.6 DULUTH, 7th AVE. W. INCLINE, HIGHLAND AVE.

a. 7th AVE. W. INCLINE

Plans for the building of the INCLINE on 7th Ave. W.— referred to in those early days as Beacon Hill—(see 2.8).

Development of stranded steel cable — wire rope — by Pennsylvanian, John Roebling, had at that time made possible such engineering accomplishments as incline railways and the Brooklyn Bridge. And at that time, a young Cincinnati engineer, Samuel Diescher, had been successful in designing and building inclines for his home town and Pittsburgh, PA. (Pittsburgh had 17 of them). To him went the designing of the Duluth Incline, made possible by ~~the Dieschers use of~~ the use of 6.6 miles of Roebling's steel cable and 11 miles of copper wire.

Construction of the steel piers had already begun by McCain Bros. when steel arrived on June 22, 1891 from Keystone Bridge Co. (predecessor of American Bridge Co.). The INCLINE had 10' gauge double track, each being 1,563 miles long — total 1.13 miles of track — using 6616. Trail with a vertical rise of 509 feet. The steel structure, 2937 feet long placement, was completed on October 6, 1891.

The brick and cement control cab was built in July. A power house was built at the same time; it contained a Corliss engine with 26" x 60" cylinders.

weighing 29 tons each Two large cars, ~~which~~ ~~were very large~~ cars were designed to carry a four-horse team and wagon in addition to the passengers that were accomodated in an enclosed cabin at one side of the platform. The entire platform of each car was enclosed by corrugated metal sides and roof attached to a steel framework. Each body was 15' wide, 14' high (16½' high over the roof), 41' long; and mounted on a 27' long steel chassis equipped with eight 33" diameter wheels set to a gauge of 10'0". Each car complete weighed 27 tons, and was connected to a 1⅝" diameter steel cable which passed around ~~the~~ two 4' drums, powered by two 70 hp motors on a shaft of the hoisting engine in the powerhouse at the top of the incline. One car would ascend while the other was descending, controlled by an engineer from a control room in the powerhouse (overlooking the tracks) in which were placed the levers which controlled the hoisting engine and brakes. When the powerhouse and hoisting equipment were completed the first trial run was made, taking place November 4, 1891. 16 minutes was required to make the ascent. Test runs with both cars were made November 29, 1891, and operations on a regular schedule began December 2, 1891. The total cost of the ~~incline~~, INCLINE, ~~railway~~, including the cars, amounted to $400,000.

DSR quickly came to realize that it would be difficult to realize sufficient revenue from the area at the top of the incline and proceeded to build a large pavilion adjacent to the powerhouse, with the hope that concerts, shows and other events would stimulate patronage. This building was two stories high, measured 130' x 150', and was of frame construction. The first floor contained a restaurant and privilege space, while the second floor contained a theater seating 1200 persons. "Beacon Hill" was opened July 4, 1892, with a total attendance of 16,000 persons. It was used principally for afternoon concerts, vaudeville performances, parties and dances. The evening amusement attendance averaged 1,000 persons nightly, while Sunday and holiday attendances ranged from 3,000 to 5,000 persons daily. During the first two years of operation it was very popular. Then interest began to lessen somewhat, so, beginning in 1895, DSR leased the building to outside parties to operate. It was used primarily as a summer theater by acting companies whose circuit included Minneapolis (Lake Harriet), St. Paul, Milwaukee, Kansas City, Des Moines, Davenport (Iowa), and Grand Rapids (Mich.) as well as Duluth. The site was always popular with tourists and excursions.

At about 7:30 a.m. on May 28, 1901, John Greenwood, the powerhouse fireman, discovered a small fire

in the coal bin. A fire alarm was turned in. Water from a 10,000 gallon storage tank at the pavilion was used to fight the fire. A fire truck was sent up on one of the incline cars at 7:45 by which time the fire had spread through the powerhouse. The firemen had started to get the fire under control when wind carried the flames into the pavilion; the wooden structure was dry and started burning with phenomenal rapidity. The flames soon cut off the water supply and as nothing more could be done, all hope of saving both buildings was abandoned. The fires in the boilers in the powerhouse were banked and the incline car lashed to the rails on the steel structure with cables and chains. However the heat grew to such an intensity that the cables were melted and the rails twisted, breaking the chains. The 27 ton incline car, its interior in flames, raced wildly down the incline, crashing into the solid masonry wall of the station at the foot of the incline on Superior St. The chassis stayed on the track, but the body disintegrated, scattering flaming wreckage high into the air in all directions, smashing the station in the process. Superior St. was covered with burning wreckage and some debris was found in the railroad yards two blocks below the foot of the incline railway. No one was injured as it had been evident to police at the scene what might happen so traffic was stopped and the area cleared of people. By 8:30 A.M. both powerhouse and pavilion had burned to the ground and the one incline car destroyed. (The two steam hoisting engines were salvaged and shipped to a new owner in Hamilton, Ontario, on October 12, 1902 for additional unknown service.

Milton H. Bronsdon of Providence, R.I., was engaged to design the reconstruction of the railway, using a self-propelled electric car on the west track and a counterweight car on the east track. Rebuilding began Sept. 14, 1901. An overhead trolley wire was erected over the west track, and the grade was changed on 170' of track immediately above Superior St. Stations were constructed at Superior St., 4th St., 5th St. and the Boulevard (7th St.). The passenger car and counterweight truck were built by the Twin City Rapid Transit Co.'s 31st St. Shops in Minneapolis, and were unloaded November 26, 1901, at the N. P. Ry. connection at 37th Ave. W. and Superior St. This car was equipped with four traction motors, with a 1" diameter steel cable running from the forward end of the car over carrier sheaves between the rails, around large sheaves at the top of the incline, then down the

#63

opposite track over carrier sheaves between the rails to the forward end of the counterweight, which was merely a truck carrying a large casting balancing the weight of the passenger car on the other track. The passenger car and the counterweight truck were also connected with a steel "tail" cable running to the bottom of the incline and around a sheave on a tension carriage. The passenger car was equipped with ordinary wheel brakes and in addition a grip brake, through which a large stationary cable passed. This grip brake was set automatically when the car reached a pre-determined speed by means of a device which was operated by another small stationary cable. While the car was capable of a speed of 12 m.p.h., it was found that this speed was disagreeable to the passengers as it made them nervous on the steep grade; the top speed was thus limited to 8 m.p.h. with the schedule speed set at 6 m.p.h. The first regular operation on the reconstructed line began January 1, 1902.

The single car soon proved inadequate to handle the traffic so during 1910 DSR collaborated with TCRT on the design of two larger cars and revised hoisting equipment. The entire installation was designed by Walter J. Smith, TCRT's Master Mechanic, who was DSR's Master Mechanic and in charge of the incline construction during 1901. After delays brought about by a great burden of work, the TCRT Snelling Shops in St. Paul were finally able to complete the two cars and hoisting equipment during January, February and March, 1911. Rebuilding of the incline railway began March 18, 1911, with completion two months later. The four existing intermediate stations were removed and five new stations built so as to accommodate cars on each track; they were located at (1) Mesaba Ave. (W. 2nd St.), (2) W. 3rd St., (3) W. 4th St., (4) between W. 5th and W. 6th St., and (5) between W. 6th and W. 7th St. (The location of the stations had to be arranged so both cars would stop simultaneously at a station.) (Entrance to the stations was by stairway leading upward between the two tracks.) (In later years two additional intermediate stations were constructed.) At the foot and top of the incline large planked platforms were built at the stations. Overhead trolley wire was erected over the east track as the new cars were equipped with trolley poles to collect electricity for lighting, heating, and operating the air compressor for the air brakes. At the top of the incline an electric hoisting station and operator's cab were constructed. The hoisting equipment consisted of two General Electric 213 motors (50 h.p. each), one K-37 controller with "dead man" handle, and one General Electric CP-21 air compressor and air brake equipment. The electric traction motors were back-geared to two 48"

diameter cast-iron power-cable drums equipped with brake bands operated by compressed air. Several automatic safety devices were installed on the hoist, including the special controller handle. (The electric motors were later replaced with two General Electric 210 motors (70 h.p. each) and in June, 1930, Simplex safety equipment was installed on the controller.) The system of sheaves comprised four 105" diameter sheaves, 224 12" diameter cast-iron sheaves, four 32½" diameter sheaves, and three 54" diameter sheaves. A cable tension sheave house was built at the lower end of the incline just below 1st St. containing the tension carriage with counterweights. The cable system consisted of 6600' of 1" diameter pulling and "tail" cable, two 2971' safety cables (one of 1½" diameter on the west track and one of 1" diameter on the east track), and 6380' of ⅝" diameter cable for the automatic brake. Each car was equipped with hand brakes, air-operated wheel brakes, air-operated grip brakes, and automatic grip brakes. The pulling cable ran from the forward end of one car over carrier sheaves between the rails to the power drums at the top, and then down the opposite track over carrier sheaves between the rails to the forward end of the other car. Both cars were also connected by a tail cable running to the foot of the incline and around a sheave on a tension carriage to prevent the cars from surging. The safety cables (one for each track) were securely fastened at the top of the incline, passing through the grip brake on each car; the grip brake would be automatically set when the cars reached a predetermined speed by means of a device operated by the automatic brake cable fastened at the top of the incline and extending the full length of the line, one on each track. 2749.9 ft. of the line was on steel trestles and 221.4 ft. on masonry foundation, the total length of the line being 2971.3 ft. Minimum grade was ~~about~~ 15% ~~and~~ between 3rd and 8th Sts., 16% between 16%
2nd and 3rd Sts., maximum grade 20% between 1st and 2nd Sts.

The INCLINE was closed to traffic the evening of May 14, 1911; the rebuilding was completed June 9, ~~1911~~, and the new cars and machinery placed in regular operation on June 10, ~~1911~~.

The electric hoist at the top of the incline, under the operation of an engineer, controlled the pulling cable which moved the cars at a speed of 6 m.p.h. An indicating dial in the incline cab showed the position of each car. A conductor on each car operated the air brakes, opened and closed the car doors, issued and received transfers, collected fares and made change, and finally notified the incline engineer by telephone when his car was ready to move, all of this at each station stop! The INCLINE engineer

Structures
power

Structures

Superior Water, Light & Power furnished electric power when Superior electrification began July 1, 1890

General Offices of DSR moved from 1st Nat'l Bank Bldg to 11th Ave. W. & Mich St.

Sep. 13, 1907 DSR switched to Great Northern Power Co. predecessor of MP&L

General Offices of DSR moved from 11th Ave. W. to 27th Ave. W 2-22-1908

Sub-station #1 34th Ave. E. & 4th St operational 3-15-13

" #2 92nd Ave. W " 5-9-16

11th Ave. W. bldg. watchman abandoned 3-9-14

27-28th Aves. W. loop in use 5-19-30

May to Oct 1939 conversion of 26th Ave. W. carhouse & shops in anticipation of complete change-over from st. cars to buses to dil-bus facility.

7-9-39 92nd Ave. W. substation equipment dismantled & moved to MP&L 57th Ave. W. DS.

Transfer table installed/received 6-90

11th Ave. W Carhouse fire 10-22-96

Power ✓
Corporate
7

Acquired Park Point St. Ry. 1917

Peak mileage was 1928: 113.64 miles
" cars was 1929: 149 cars

Become Duluth-Superior Transit Co. 1-25-1933 --(Sept. 1, 1933)

Abandonments:

Superior 1935
Duluth 1939
One report 4-12-1939 — WRONG
another report 7-8-1939 (correct? YES)
Duluth 9-16-1939 (SEPT. 4, 1939 LABOR DAY)

1933 data: (Aug. 1st inventory)
96.90 miles 131 pass, 18 work cars. — correct

11-29-1897: General offices moved from 1st Natl Bank to 11 AW & Michigan St. (Powerhouse located here)
7-7-1898: Dul. St. Ry. went into receivership
8-13-1900: DSR & D-S Trac. Co. consolidation and reorganization
9-13-1907: First electric power received from St. Northern Power Co.
2-22-1908: Offices moved to new building (carhouse) at 27 AW & Superior St
3-15-1913: Sub Sta #1 put into operation 34 AE E 4SE
5 ?-1916: " " #2 " " " 924 W (& Grand?)
5-2-1930: DSR went into receivership (Oscar Mitchell, receiver).
A.M. Robertson died 7-22-33
9-1-1933: Reorg. of DSR (Oscar Mitchell receiver - taken over by

Jas. De Santo paid $15.00/month (Feb. 1903) for Inclino waiting room rental

Aerial Bridge had GE 67 motor(s) 1907

Structures Bridges Power

Structures DSR sold PP GE motor/generator set for $2000 to Nat'l Power Machinery Co. 8-21-18

2200# transfer table from Dorner & Dutton, Cleveland June 1890

Erection of power house stack (11th Ave. W) $3800 March '91

Fire in 11th Ave. W. power house 10-22-96

DSR did maintenance/repairs to DS Bridge and charged bridge co.

"Temporary Bridge" across bay. DSR paid ½ of cost Dec 1897

2-6-99 $20.00
2-7-99 $12.00
11-8-98 $17.75

"East End Car House" rented for 11-8-92 election $25.00

"Bench St " " by "Parker Paine, Lessee" as "Ice Skating Rink" from 11-1-94 to 4-30-95 for $100

" " " 12-15-97 " 4-30-98 " $150 other lessees

H. C. Kendall stored carriages in E. End car house 3-27 to 4-29-99 @ 12¢/day

Frame car house, Woodland sold for $15.00 5-13-03

Operations

"Woodland Park House" paid DSR $5.00 for charter car 24 pass" from "Woodland" 5-30-91

Garfield & Lake Ave. line 1894 miles in Sep. '92

Charter car #33 "one trip to Woodland" $3.00 1-3-96

Car "St. Louis" used 1-16-97 $7.50

Alhambra Theatre, Milwaukee operated Pavilion season beginning June 20 1896

DSR paid US $62.50 for carrying mail ~~for~~ per quarter 1898 between Duluth & W. Superior, and Duluth & Lakeview

see ~~1.18~~ (14) DSR repaired D Belt Line Ry cars 12-98

" built "tower for high diver at Pavilion"

" furnished current to Oneata School 12-99

" " rail bonds to Interstate Traction 5-1900, traction motor rebuilding 9-30-07 10-31-07 1-31-05

" " 3 chartered cars for funeral from Tower Ave. to Nemadji River & return $11.00 12-30-00

" repaired DBL cars; 3 "old car stoves" 11-5-10

" " Aerial Bridge electrical equipment 3-11-12

Equipment 28?

"Electric plow" delivered "to foot of Garfield Ave" for SRTR 3-31-95

Car #29 on Highland line 2-5-95

Car #24 had vestibule door 3-17-96

30 electric headlights fabricated by DSR in May '97 to partially equip cars

Cars not equipped w/ fenders in May '97

" equipped " " " Dec '98

One mule car & specially built truck to DBL ~~$300~~ 5-5-1900 $265

2 open cars #1 & #2 DSR sold to Interstate Traction for $600 6-1-02 less $150 for paint & repairs

Aerial Bridge had GE 67 motor(s) 1907

Personnel Hiring age of motormen/conductors was 25 to 40 in 1897

Structures Ordinances pp 164 City gave DSR permission on 2-15-92 to erect switchmans box at 3rd A.W.
SRTR had one waiting room 20' x 40' and one landing dock
25' x 60 on Connors Point at time of sale Aug. 31, 1900
Structures see pp 286-293 for Interstate Bridge details (corporate)
Effective 5-1-1901 DSR furnished electric power to Duluth Heights
@ 2½ ¢ per KWH

~~Ordinance 112~~ Transfers ~~Original DSR franchise "specifically provides that we shall not be required to carry any passengers a greater distance than three miles for one fare".~~
~~At Christmas 1893 DSR inaugurated a "one fare" over all lines of the system.~~
~~(In July 1903, for reasons only of expediency in moving large numbers of passengers from the Forepaugh-Sells Bros. Circus, DSR operated an express car service, without transfer privileges, with cars appropriately marked.~~

~~118 DSR hauled a lot of crushed rock for City for st resurfacing projects in 1903~~

Structures 133 City vacated alley June 22, '04 so DSR could build 26TH Ave. W. carhouse

" 163 Garfield waiting station

Structures D-S Bridge pp 284

power

would not operate the hoisting equipment until the telephone communications "East car clear" and "West car clear" had been received. Telephones were installed in both cars and in the engineer's cabin on August 4, 1927.

Fifteen minute service was provided, each car making one round trip every thirty minutes. Running time for a one-way trip was eight minutes. This operation continued without accident until the incline railway was abandoned on Labor Day, September 4, 1939, the last run being the 5:35 P.M. trip. The incline structure was entirely removed by December 1, 1939.

b. . D. HIGHLAND AVE. CAR HOUSE

At an unknown date and an unknown builder, a 15' X 50' frame car house was built on a 195' spur ~~between~~ track ~~8th and 9th Sts~~ midway between 8th and 9th Sts. along ~~side~~ the east side of the south end of the line. Provisions were made for the maintenance and repair of the HIGHLAND's line's one car here.

E. HIGHLAND PAVILION

DSR had very come to the sad realization that it would be ~~difficult~~ quite difficult to eke satisfactory revenue from this austere operation in a reluctant area. A large 100' X 300' ornate, wooden pavilion on a 150' X 450' lot was built and opened July 4, 1892 adjacent to the power house at the top of the INCLINE... referred to as "Hill Top"... with the hope that the dining rooms, concerts, dramas, dances and other events would produce additional revenue at the pavilion and from the INCLINE which was the more or less convenient and direct means of access to and from the "Beacon Hill" fun spot.

The disasterous fire on May 28, 1901 that destroyed much of the INCLINE facilities also destroyed the pavilion. It was not rebuilt.

NOTICE TO OWL CAR PATRONS

Change in Time

Owing to the change from normal time to "Summer Time," which will take place at 2:00 a. m. Sunday, March 30th, the owl car trips leaving New Duluth at 2:34 a. m., normal time, and Lester Park at 2:33 a. m. normal time, will be omitted in order to set the owl cars an hour ahead and put them on "Summer Time," on which time cars will be run thereafter.

The time of Owl Cars on the night of the change is given below:

EAST BOUND.

—Leave	A. M.		Pass 3rd Ave. W.	Destination
New Duluth	1:04	Normal Time	2:00 a.m.	3rd Ave. W.
71st Ave. W.....	3:00	Summer Time	3:30 a.m.	Woodland
	(2:00	Normal Time	2:30 a.m.)	
New Duluth	4:00	Summer Time	....	26th Ave. W.
	(3:00	Normal Time)		
26th Ave. W.....	4:1[illegible]	Summer Time	4:33 a.m.	Lester Park
	(3:1[illegible]	Normal Time	3:32 a.m.)	

WEST BOUND.

24th E. and 4th St.	1:16	Normal Time	1:30 a.m.	71st Ave. W.
3rd				
Woo				

NOTICE!

Inclined Railway Cars to Stop

The work of renewing the main cable makes it necessary to stop the Incline cars after the last trip Saturday night. We hope to have them running again Sunday afternoon.

In the meantime transfers from West Fourth street and Superior street cars will be accepted on Highland avenue cars. Transfers from Highland Avenue cars will be good on West Fourth street cars at Fifth avenue West, and all cars on Superior street.

We regret that this work will cause inconvenience to some of our patrons and assure them that the work will be completed as quickly as possible.

Regular patrons of the Inclined Railway have, no doubt, noticed our crews at work on the structure during the past two months. They will be interested in learning some of the items which the job requires:

Special length ties at $3.00 each.	600
3x6 timber guards	1,000 ft.
Labor renewing ties and rails..	170 man days
Paint, first coat	450 gals.
Labor, first coat	416 man days
Cable, best one-inch steel	3,500 ft.

To catch up on the "deferred maintenance" alone on the Incline will take all the fares collected on the line for the greater part of a year.

Twin Ports Electric Lines

NOTICE TO OWL CAR PATRO

CHANGE IN TIME

Owing to the change from "Summer Time" to normal will take place at 2 a. m. Sunday, Oct. 26, it will be change the owl car schedule to conform with the new tim

Cars will run as follows on the night of the change:

—EASTBOUND—

Leave—	A. M.	Pass 3rd. Ave. W.	Destina
New Duluth	1:04 (summer time)	2:00	Lester P
71st Ave. W.-3rd St.	2:00 (summer time)	2:30	3rd W. o
	1:00 (normal time)	1:30	
3rd Ave. W.....	3:00 (summer time)	3:00	Lester Pa
	2:00 (normal time)	2:00	
New Duluth	2:34 (normal time)	3:30	Woodland
New Duluth	4:00 (normal time)		26th Ave.

—WESTBOUND—

24th Ave. E.-4th St..	1:16 (summer time)	1:31	71st W. a
3rd Ave. W.....	2:31 (summer time)	2:31	New Dulu
	1:31 (normal time)	1:31	
Lester Park.....	2:30 (summer time)	3:00	3rd Ave.
	1:30 (normal time)	2:00	
Lester Park.....	2:33 (normal time)	3:00	New Dulu
Woodland	4:01 (normal time)	4:30	West Dul

Sept 1 1920.

NOTICE!

TO PATRONS OF

SEVENTH AVE. INCLINED RAILWAY

The need for immediate repairs to machinery makes it necessary to stop the Incline cars after the last trip tonight.

We hope to have them running again Sunday afternoon.

In the meantime transfers from the West Fourth Street line issued at Fifth Avenue W Street will be acc land Avenue cars. Highland Avenue c on West Fourth Str Fifth Avenue West a Street and on all cars Street.

TWIN PORTS ELECTRIC LINES

A Friend of Mine Rode

He took quite a ride sick, but took some right and ready for Answer, more soda. Cleveland, Columbia, motor cars. Martin Re

I Rode in Warr

As suggested, she h I can hear it yet, a later. We sell motor c Columbias. Race Clevelands. Martin

7.7 DULUTH - SUPERIOR (INTERSTATE) BRIDGE (DSB)

It has been referred to variously, during its lifetime, as the Duluth-Superior Bridge, Interstate Bridge, The Bridge and The BN Bridge.

For operations of ferry boats, a temporary timber trestle, docks, and for the planning, history, street car operations and demise of the bridge, see 2.12 and 3.10.

When built/completed on July 13, 1897, street car tracks on the bridge were double-track, standard gauge. Cars of SRTR were yet narrow gauge. Therefore, cars of DSR crossed the bridge, transferred passengers with SRTR at the Superior approach to the bridge, turned and returned to Duluth. Joint operation of the two companies, over the bridge began March 28, 1899 when SRTR converted to standard gauge (see 2.11).

The center portion of the bridge was a 485-foot-long steel truss swing span, said to be the longest swing span when it was built. 325 foot humpback steel spans and wood trestle approaches were at both ends of the center span. There were double-track railroad tracks through the center of the spans. The 12-foot square control house was in the middle of the swing span about 18' above the railroad tracks.

With the coming of street cars and autos, horse-and-wagons became a deterent on our streets and roadways, and on the DSB. A 10' wide, fenced, wooden "wagon bridge" was erected at both bridge approaches, and hung from the west side of the bridge span.

The Bridge suffered several serious tradgedies during its lifetime, resulting in interuptions to street car operations. On August 11, 1906 the steam freighter Troy struck the swing span, knocking it off the center pier into the Bay, ~~and~~ blocking both passages. The Bridge was repaired and operations resumed on September 27, 1908. Passengers were carried between the two cities by ferry boats during the difficult two-year period. The Bridge was struck again when the steamer Farr struck and disabled one of the fixed spans on April 21, 1924. DSR ferry Fashion furnished interstate service until the Bridge was repaired and traffic resumed on December 19. Sparks from the great forest fire ignited the Duluth approach on October 12, 1918. See-saw operations over one side of the Bridge began November 19; first track at 6:10 pm; second track at 11:00 p.m

The last street car to cross the BRIDGE: midnight June 5, 1935. All street car operations ceased in Superior on this date.

The swing span was locked in the open position on December 21, 1962, thus ending all traffic over the Bridge. It was sold by the BN to the Duluth Port Authority in December 1980 for $1.

7.8 DULUTH, MISCELLANEOUS

DSR's smallest structure was the 4' x 6', 7' high, street-car-yellow "starters booth" that sat prominently on the southwest corner of 3rd Ave. W. & Superior St. Though small and conspicious of all DSR structures, many looked on it as an icon. The City gave DSR permission to build the "box" on February 15, 1892. The purpose of the booth was to monitor movement of cars in Duluth; cars on all lines — except W. 4th ST. line — passed here. And its strategic location helped resolve service interruptions. Its service ended ended April 1, 1938, and it was removed.

The City replaced the double-track bridge over Tischers Creek at 32nd Ave. E. & Superior St. on October 10, 1910. In a strange maneuver, DSR furnished two work/flat cars to test vertical movement ~~under~~ of the span under

~~7-8~~

Stress/load conditions. DSR was putting larger 23 ton cars on that line. The work cars were loaded with several lengths of street car rails, then operated back-and-forth across the bridge while engineers watched/calibrated movement on their ~~surveyors~~ surveyor instruments.

Early on, for the comfort and convenience of its passengers, DSR placed shelters at strategic locations. Little is known (sorry!) of their size, shape, color or location, except the first to be erected, January 1, 1908 at 24th Ave. E. and Superior St.

A large, unheated waiting station was located just outside the steel plant gate in Morgan Park. Ownership is not recorded.

Little is known of the WOODLAND car house, built by North West Thomson-Houston Co. on two lots at the end of the single-track line on Woodland Ave. & Austin St. where single-end cars operated counter-clockwise. A construction date is not known; however Motor Line Improvement Co. began trial operations on the WOODLAND line on April 20, 1891; full operations began April 28. The car house and car 34 were severely damaged by fire on April 17, 1894. The repaired frame building was sold in May 1903 for $15. In April 1921, DSR built a new waiting station/store in the end-of-the-line loop. Operation of cars was changed to clockwise, affording greater convenience.

2.9 SUPERIOR

a. Unfortunately, little is known of early day stables, car houses, shops and offices in Superior. Spasmodic horse car operations had begun on 5th St. in August 1884.

The Superior Times of August 27, 1887 announced "F. A. Dole has the contract for building the barn and office for the street car business." On September 3 it reported "... the barn ... of solid brick ... as near fireproof as practical..."

Then, in October 1889, Douglas County Street Railway Co. (DCSR) constructed a stable, car house and office on 5th St. at Newton Ave. (25th Ave. E.)

b. Electrification and simultaneous conversion to standard gauge had come on strong, nationally, in March 1890. A contract was let by DCSR in December 1890 for construction of a car house at the northwest corner of Belknap St. and Catlin Ave. Subsequent contracts were let in December 1891 for enlargement of the car house and office. In November 1892, a power house ~~was built~~ was built. An undated photo of this location shows a 3-track car house with trolley wires and car 102 parked in front. But it does not show a 10' X 20' frame general office building ... "effective" November 1892,

7.9 SUPERIOR, LAMBORN AVE. BRIDGE

The bridge was referred to, also, as Howard's Pocket Bridge, Lamborn Bridge, The Big Bridge.

The Superior EVENING TELEGRAM of May 14, 1891 reported, "The Howard's Pocket Bridge is completed. It is a fine structure." Construction began March 16. Cost: $50,000, built by King Iron Bridge Mfg. Co. of Cleveland.

The 295 foot draw span had an 18 foot roadway with walkways on both sides. The piers were built in the fall of ~~the~~ 1890s.

The EVENING TELEGRAM of October 26, 1951 reported, "The original wooden bridge was opened and closed by hand with the use of a windless." It was torn down when the Lamborn Ave. Bridge was built.

The EVENING TELEGRAM of March 12, 1897 reported, "Repairing of the swing bridge was completed yesterday, and the big bridge is now in better shape than when it was new. The repairs made were mostly to the bearings which were defective and appeared to result from faulty workmanship on the part of the bridge people at the beginning

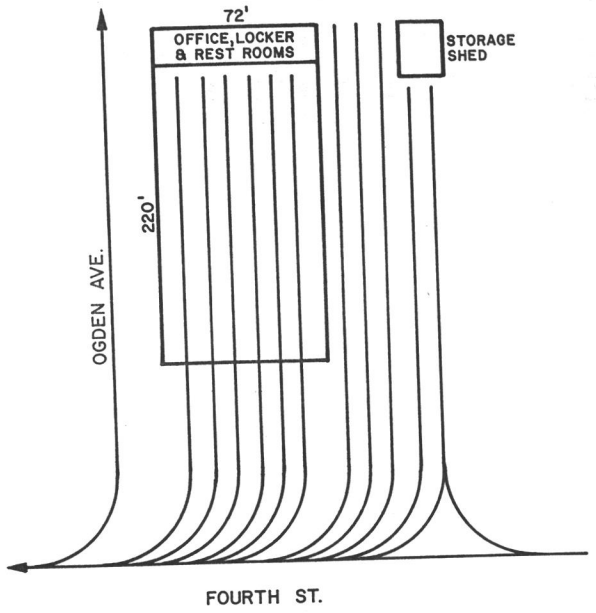
In its opened position, it provided a passage for ships of about 130' on either side of the Bridge.

Unfortunately, there is no recorded type of power or control for/of the Bridge; we can quite likely assume electric motors and controls.

Jim Kreuzberger 9 16 09

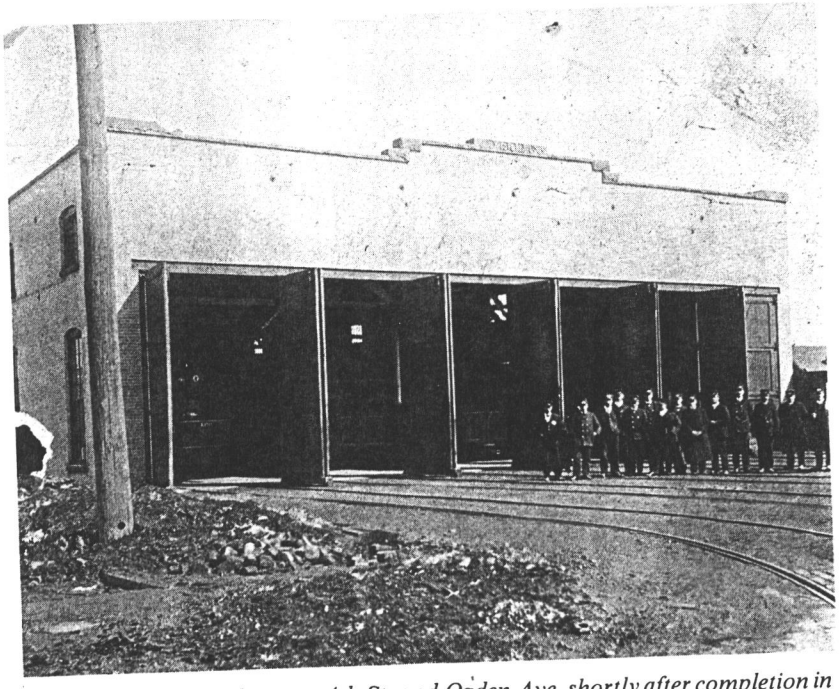
FLEETPERASE MADE IN USA

DULUTH STREET RAILWAY
SUPERIOR, WISCONSIN
CARHOUSE
1908



See 7.9c

DSR constructed a new brick carhouse and office building at 4th St. and Ogden Ave., completed December 19, 1902. During 1908 four storage tracks and a wye were added. As of January 1, 1927, this facility contained .662 miles of track. It was converted into a bus garage when the streetcars were replaced.



The new Superior carhouse at 4th St. and Ogden Ave. shortly after completion in 1902. (Wayne C. Olsen collection)

Considerable additions were ~~made~~ built by DCSR in January 1893: a 100' x 110' wood floor, one-story frame office building, a 7-track car house with pits under 5 of them, a wood frame 50' x 100' machine shop, blacksmith, foundry and waiting room. In July SRTR advised the City that an oil house and a salt house had been added, and that track and street improvements had been made on Belknap St.

Operations did not go well for SRTR in the late 1890s. Immediately following the May 16, 1900 foreclosure, all shop operations in Superior were closed and moved to the 26th Ave. W. shops in Duluth on September 8. The frame tool house, store house, and wye track on Belknap St. remained operational.

c. 4th & Ogden Car House This, apparently, was not a wise move. At a directors meeting on December 20, 1906, authorization was given for construction of a new car house in Superior. On August 22, 1902, DSR contracted Schmidt Bros. to construct a car house on the northeast corner of Ogden Ave. & 4th St.: $21,000. The brick 72' x 220' building housed an office, locker room, and a 6-track car house, all of which became operational on December 19, 1902. 5-car storage tracks, a wye and a storage shed at the end of track 5 were added on the east side of the car

house in 1908

Although car operations and facilities had been abandoned at Belknap St., some miscellaneous operations continued: a frame tool house, store house, a barn and wye were retained. An oil house was built in 1905. A hose house, valve house, water tower and sprinkler system were built in 1909. Demise of the Belknap facilities is not known.

d. Tower Ave. Car House
In the two years following the June 1890 electrification, there were major track extensions in Superior. Among these was a double-track extension of the Tower Ave. line to 28th St. Perhaps it was during this time that a "...brick, stone and iron..." stable and car house were built at 28th St. Its demise is not known.

e. ~~At a later time, date unknown, a short span was built~~ e. Billings Park line:
In late 1892, a timber viaduct was built over the BN/GN tracks by DCSR for its narrow-gauge ~~21st St.~~ 21st St./Billings Park line. This was converted to standard gauge on November 1, 1902.

At a later time, date unknown, a short span, on the same line, was built over the DSS&A (Soo Line) railway tracks.

f. For a description of the Duluth-Superior Interstate line, see 3.10.

Duluth-bound cars on the ~~passengers aboard~~ Duluth-Superior Interstate line ~~cars~~ turn north from 3rd St. on to Lamborn Ave, cross the LST&T Railroad tracks, turn a half right, and, zippo!, they are on the Lamborn Ave. Draw Bridge.

Unfortunately, little is known of the Bridge, built in 1891. The steel span, 296' long, crossed the 264' wide Howards Pocket ship canal.

The SRTR tracks on the Bridge, when built, were ~~narrow gauge~~ single track, narrow gauge on this south approach portion of the Duluth-Superior Interstate Bridge. In mid-1893, these narrow-gauge tracks were converted to a double-track crossing of the Bridge. In 1897, DSR extended its ~~double track~~ standard-gauge tracks across the Interstate Bridge to a ~~loop~~ turn-around wye on the Superior approach to the Bridge, exchanged passengers with SRTR, and returned to Duluth — a somewhat inconvenience for passengers.

Because of financial and management difficulties, SRTR was not able to convert its Superior operations to standard gauge until March 28, 1899. So, on this

date, the double tracks on the Lamborn Bridge were converted to standard gauge. Now we had a problem: the narrow, 18' wide Lamborn Bridge roadway restricted the space between these new double tracks. Cars could no longer pass each other on the Bridge!

g. The Superior operations seemed quite concerned with the shelter and comfort of its passengers. Several waiting station shelters were provided. We have records of a few: on the Billings Park loop in 1912; at Iowa Ave. & 21st St. in 1909; at Belknap & Hill, Belknap & Spruce, both in 1917... among several others. A car-starter's booth was built at Tower & Belknap in 1920. It was removed when car operation ended in June 1935.